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UNITED STATES NAVAL INSTITUTE PROCEEDINGS

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PRESIDENT ROOSEVELT AND REAR ADMIRAL R. D. EVANS, TWENTY YEARS AGO, AT THE TIME THE ANNOUNCEMENT WAS MADE THAT THE BATTLESHIPS IN THE ATLANTIC FLEET WERE TO GO TO THE PACIFIC COAST UNDER COMMAND OF THE LATTER.

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PRESIDENT ROOSEVELT GIVING HIS LAST MESSAGE TO ADMIRAL EVANS ON THE DECK OF THE "MAYFLOWER" BEFORE THE DEPARTURE OF THE FLEET FROM HAMPTON ROADS DECEMBER 16, 1907

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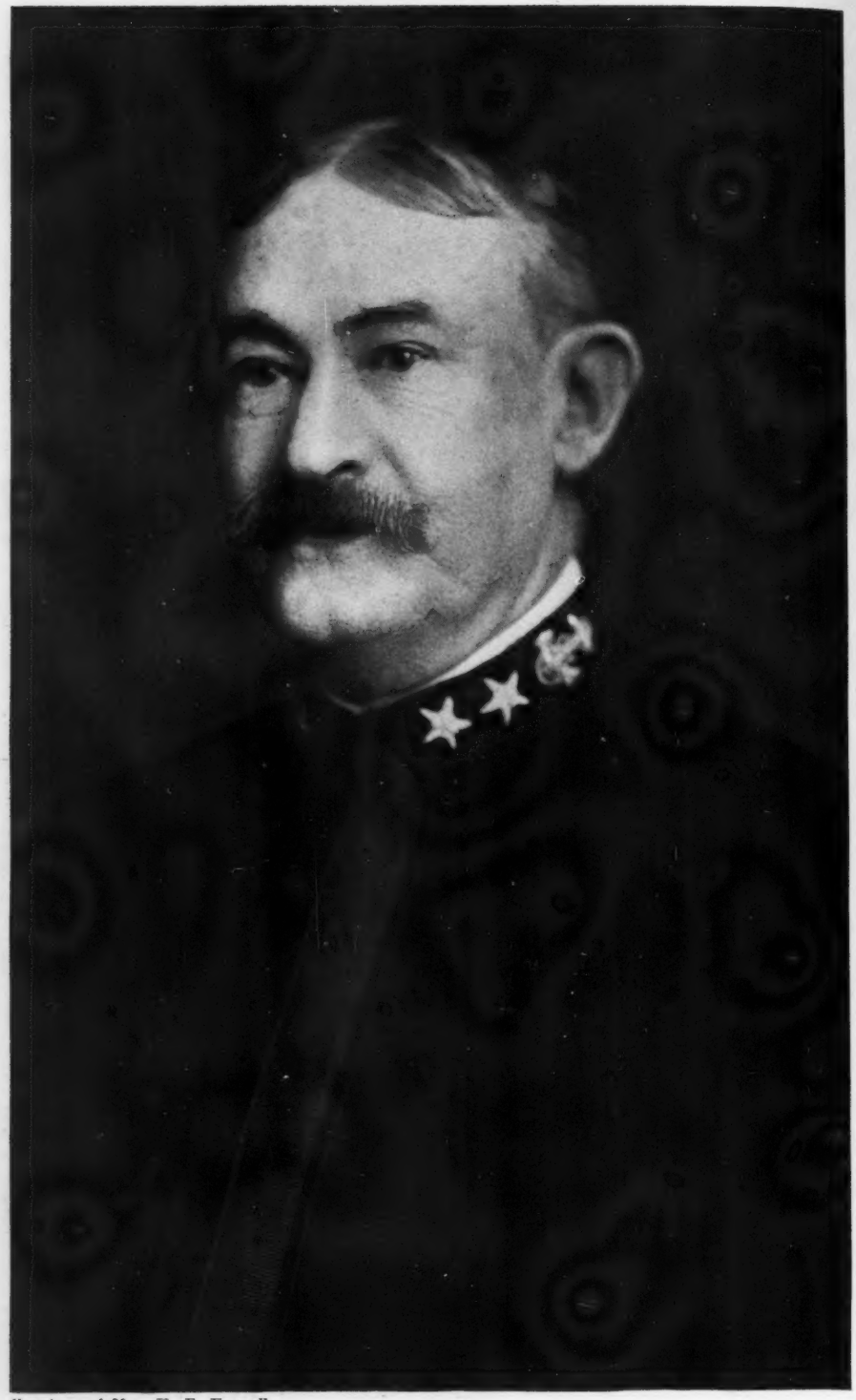
REAR ADMIRAL ROBLEY DUNGLISON EVANS, U. S. NAVY
The Commander-in-Chief of the Battle Fleet on the Voyage from Hampton Roads to the Pacific Coast of the United States.

Courtesy of E. J. Colleran, Chief Photographer, U.S.N.

BUST OF REAR ADMIRAL EVANS IN MEMORIAL HALL, U. S. NAVAL ACADEMY AT ANNAPOLIS



Courtesy of Mrs. H. E. Yarnell

REAR ADMIRAL CHARLES M. THOMAS

He was in command of the Second Squadron during the voyage around South America; was appointed Commander-in-Chief on arrival of the fleet at San Francisco and ten days later turned over the command to Admiral Sperry.

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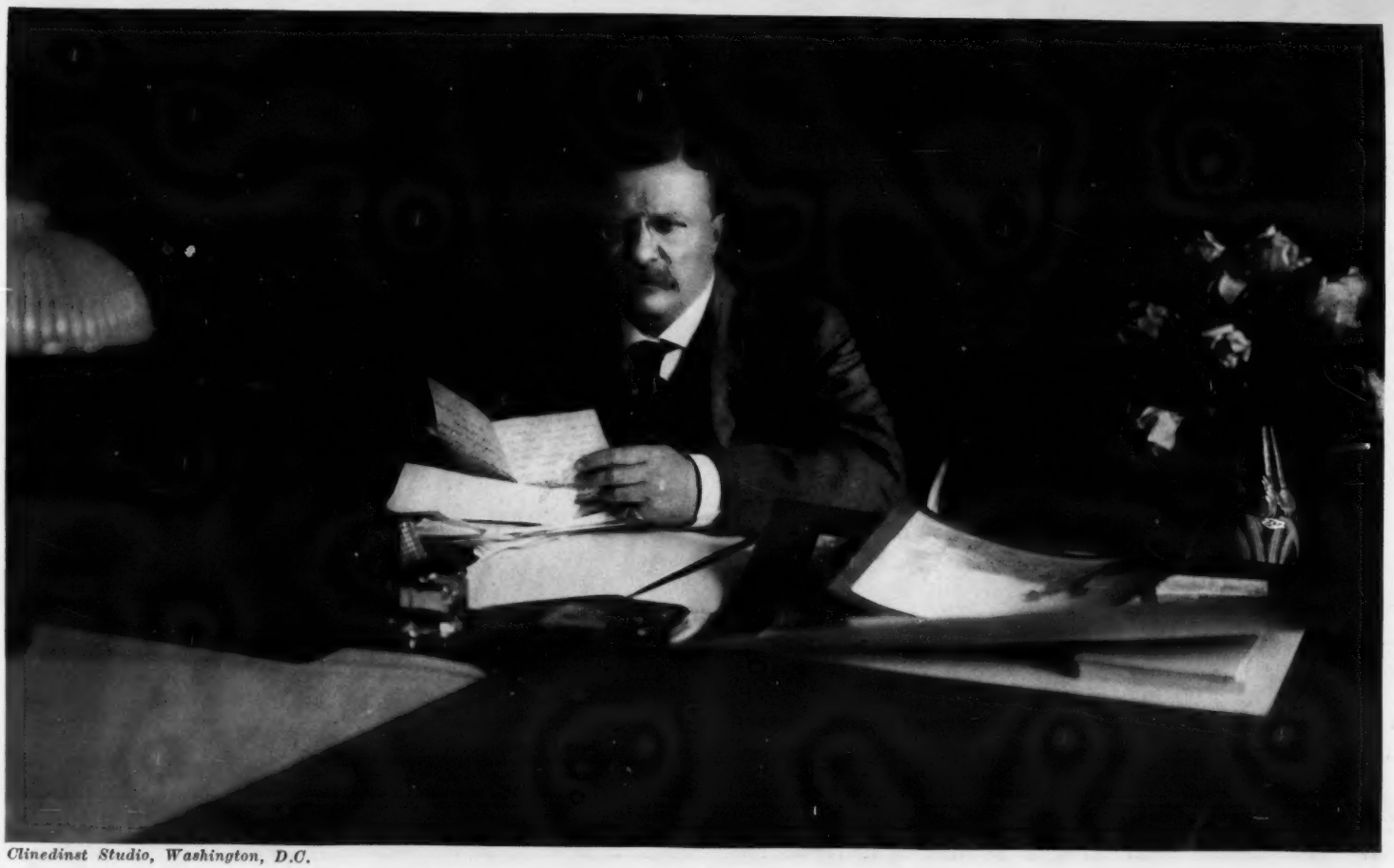

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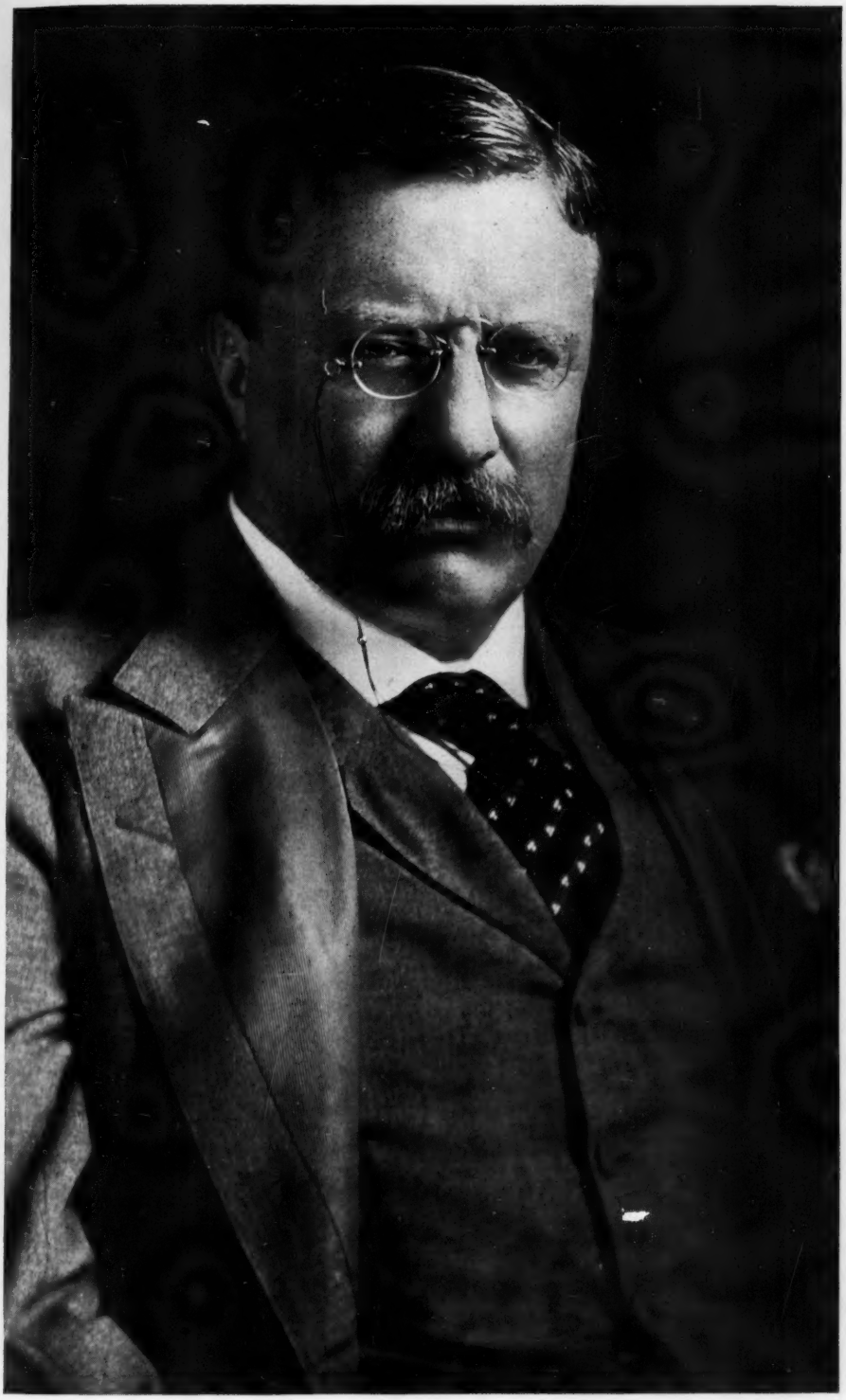
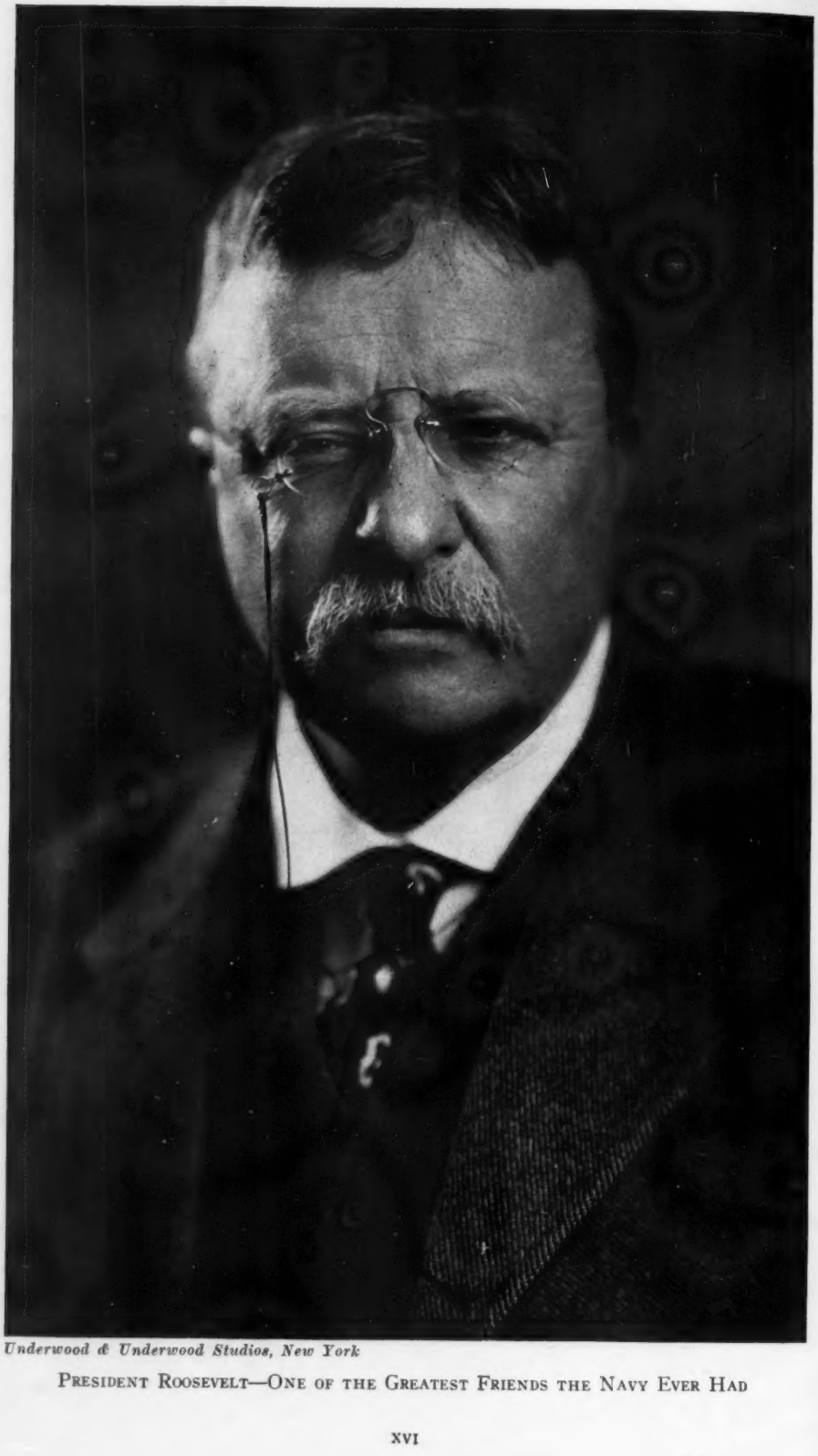


PRESIDENT ROOSEVELT ABOUT THE TIME THE FLEET STARTED ITS VOYAGE AROUND THE WORLD—1907



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PRESIDENT ROOSEVELT—ONE OF THE GREATEST FRIENDS THE NAVY EVER HAD

UNITED STATES
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Vol. No. 53, No. 12 DECEMBER, 1927 *Whole No. 298*

Battle Fleet Voyage *to the* Pacific, 1907

Extract from President Roosevelt's Message to Congress, December 3, 1907

EDITOR'S NOTE: Twenty years ago this month the Battle Fleet, so designated for the first time by President Roosevelt in the message quoted below, left Hampton Roads, Virginia, for the Pacific Coast of the United States via the Straits of Magellan. Two weeks before the departure of the battleships, six destroyers with their tender left Hampton Roads on the same voyage planning to join up with the battleships at Punta Arenas, all vessels to make the remainder of the passage through the Straits of Magellan together. The sixteen battleships and three auxiliaries plus the Commander-in-Chief's tender, the U. S. S. *Yankton*, left Hampton Roads, December 16, 1907, being reviewed by President Roosevelt in the *Mayflower* as they passed out to sea. See illustrations.

UNTIL our battle fleet is much larger than at present it should never be split into detachments so far apart that they could not in event of emergency be speedily united. Our coast line is on the Pacific just as much as on the Atlantic. The interests of California, Oregon and Washington are as emphatically the interests of the whole Union as those of Maine and New York, of Louisiana and Texas. The battle fleet should now and then be moved to the Pacific, just as at other times it should be kept in the Atlantic. When the Isthmian Canal is built the transit of the battle fleet from one ocean to the other will be comparatively easy. Until it is built I earnestly hope that the battle fleet will be thus shifted between the two oceans every year or two.

The marksmanship on all our ships has improved phenomenally during the last five years. Until within the last two or three years it was not possible to train a battle fleet in squadron maneuvers under service conditions, and it is only during these last two or three years that the training under these conditions has become really effective. Another and most necessary stride in advance is now being taken. The battle fleet is about starting by the Straits of Magellan to visit the Pacific coast. Sixteen battleships are going under the command of Rear Admiral Evans, while eight armored cruisers and two other battleships will meet him at San Francisco, whither certain torpedo destroyers are also going. No fleet of such size has ever made such a voyage, and it will be of very great educational use to all engaged in it. The only way by which to teach officers and men how to handle the fleet so as to meet every possible strain and emergency in time of war is to have them practice under similar conditions in time of peace. Moreover, the only way to find out our actual needs is to perform in time of peace whatever maneuvers might be necessary in time of war. After war is declared it is too late to find out the needs; that means to invite disaster.

This trip to the Pacific will show what some of our needs are and will enable us to provide for them. The proper place for an officer to learn his duty is at sea, and the only way in which a navy can ever be made efficient is by practice at sea, under all the conditions which would have to be met if war existed.

Is Enactment *of the* Britten Bill Desirable?

By CAPTAIN J. K. TAUSSIG, *U. S. Navy*

IF THE naval service is to be maintained at a high state of efficiency, new legislation affecting the commissioned line officer personnel is imperative. That this is recognized by the Navy Department is shown by the authorities having listed the Britten Bill as item number one for consideration by Congress at its coming session. That the necessity for such legislation is not apparent to a large part of the service is evident to the writer from conversations had with many officers. It is also apparent that of those who appreciate the need for new legislation, many are not in favor of the proposed bill, in parts or *in toto,* due either to a misunderstanding or misconception of the features involved, or to a belief that promotion by selection is wrong in principle and that the navy should revert to promotion by seniority.

The factors in the solution of the problem to determine the best laws for controlling our promotion and retirement are so many, so intricate, and so involved, that unless one has made a thorough study of the subject —one which includes the mathematics of it —the complexity cannot be appreciated. Having made such a study, the writer feels that a brief discussion may help to clear the atmosphere for those whose ideas are more or less hazy.

Accordingly, it is proposed here briefly to discuss: (1) The evolution of the present promotion laws; (2) The results and disadvantages of promotion by straight seniority; (3) The defects of the present statutes; (4) What the so-called Britten Bill provides, and the advantages which will accrue to the service by its adoption.

In looking backward through the evolution of the statutes which from time to time have regulated the promotion of the commissioned officer personnel of the Navy, several things are apparent.

First: The change in law in each case has been caused through pressure brought to bear by certain groups of individuals with a view to remedying the unsatisfactory situation for that particular group.

Second: In consequence of the legislation enacted, a relief was furnished, and for a short while the new law worked smoothly and satisfactorily.

Third: Within a few years it developed that the remedying of the situation for the particular group gradually brought about an unsatisfactory situation for another particular group.

Fourth: In none of the laws enacted was there a clear understanding of its effects on the service or on individuals at some future period—say ten to fifteen years thence.

Fifth: In practically all this legislation the guiding star has been the effect on individuals rather than on the efficiency of the Navy as a public servant of the nation. The younger officers, that is, those who entered the Navy subsequent to the enactment of the so-called "Plucking Board" law, do not know the situation with respect to the commissioned officer personnel when seniority was the controlling criterion for promotion. It is undoubtedly hard for them to appreciate that under those conditions:

1. Ensigns were in that grade for ten years.

2. Lieutenants were in that grade from eighteen to twenty years.

3. On reaching the rank of lieutenant-commander most of the officers were over fifty years of age.

4. From then on they passed rapidly through the upper grades, having only a short time in each.

5. This method of promotion permitted some "dead wood" to reach the very top of the rear admiral list, while in the grades of captain, commander, and lieutenant commander there were many inefficient officers.

6. That our gunboats of from 1,000 to 2,000 tons were all commanded by commanders of about fifty-five years of age, who, in many cases, were having their first thrill as captain of a ship; and that the execu-

tive officers of these ships were grey haired lieutenant commanders—some in the fifties.

It now seems strange that this state of affairs was allowed to continue so long. While it became apparent that as the Navy grew larger and as ships grew bigger our officer personnel needed revamping, it was not this general unsatisfactory condition which forced the change in legislation. The pressure was brought by some of the older officers (relatively to their contemporaries) to whom it was apparent that unless there was a change, they would either retire for age (sixty-two years) as captains; or, if promoted to rear admiral would not hold the rank long enough to hoist their flag either ashore or afloat, although in many cases they were the most efficient captains, and would have made the best flag officers. It was natural, of course, that these officers should seek a remedy.

The first remedial law provided for selection *out*. Each year the "plucking board" named a limited number of officers—those considered by them as the least efficient (professionally, physically or morally)—to be placed on the retired list in the next higher grade. Those selected out were limited to a small fixed number. If there were voluntary retirements, and there usually were, owing to the next higher rank inducement, the number plucked was reduced accordingly.

There is no question but that this method of selection resulted in the weeding out of many of the least efficient; but it had several pronounced defects.

1. There was not sufficient elimination to increase greatly the stagnant flow of promotion.

2. There was nothing to insure the *most* efficient reaching the top.

3. The relief for the older men was not as pronounced as expected.

4. The plucking out of an officer left a decided stigma, which, in some cases, especially in the latter years of the law's operation, was not deserved.

Most officers who were plucked felt that a grave injustice had been done them. Some carried their grievance to Congress, with the result that the law was repealed, mainly on account of its effect on the individuals concerned.

Selection *out* is a drastic method to apply to the *senior* grades. It did not insure the most efficient reaching the top; and any law which does not insure this (insofar as humanly is possible) is bad for the Navy, as it is not productive of maximum military efficiency.

The selection out law was succeeded in 1916 by the personnel act which provided for selection *up* to the grades of rear admiral, captain, and commander. With this selection up were incorporated provisions for the retirement of officers who had not been promoted on reaching certain specified ages. This law was designed for the purpose of providing:

1. Officers in each rank at ages most suitable for performing the duties of that rank.

2. A reasonable and proper flow of promotion.

3. The most efficient officers reaching command and the flag ranks.

Whether or not these intended functions have been accomplished is a matter of divergent opinions. A brief review of their workings may, for some, clear the atmosphere.

The World War coming shortly after the promulgation of this law prevented it from operating as its authors intended. This was partly due to the stress of war, and partly to the large increase of officer personnel. This augmentation in the number of officers provided the desired rate of promotion for a number of years, without the forced retirement provisions becoming operative. As a consequence until recently there have been very few retirements due to age-in-grade (or length-of-service), and this paucity of eliminations continues in both the commanders' and lieutenant commanders' grades. In fact, excepting in the captains' grade during the last few years, the retirements due to non-selection can well be likened to the process of selection out under the previous law.

The conditions which made inoperative the provision of retirement for age-in-grade did away with the necessity for stringent selection in order to maintain the desired rate of promotion. Therefore, the policy of the selection boards, until this year, has been to select only from the tops of the various grades, and to pass over only a few who, to the board, seemed not so well fitted for promotion as others below them on the list. This is still the policy insofar as the commanders and lieutenant commanders are concerned. There has been much criticism

of the various boards for pursuing this course of action. Is the criticism justified?

The members of the board in making their selections are governed by two main factors specified in the oath:

1. The efficiency of the naval service.
2. The fitness of the officers concerned.

Officers are prone to criticize the boards for not having selected the most fit from *all* those eligible. No consideration is given as to whether or not such procedure would be best for the efficiency of the naval service.

It is believed that the selection boards have (as a rule) struck a reasonable balance between the two main factors, and that they have acted wisely in their policy of (until recently in the captains' grade) selecting only from the tops of the lists, and thereby eliminating only a few. The reasons for this belief are:

The great expansion in personnel has resulted in officers in all the upper grades being abnormally young. The senior captains only last year reached the ages contemplated by the law, and the senior commanders and lieutenant commanders are still considerably below those ages. Consequently, there has been a growing hump in the grade of rear admiral which is now working a hardship on those captains who happen to be at the top of the list. To have extended further down and picked up still younger captains would have augmented this hump, much to the detriment of the efficiency of the service. But now that the captains at the top of the list are at the age (length of service) contemplated, the board has commenced to reach down. And there is no doubt that this procedure will be followed with respect to the commanders and lieutenant commanders just as soon as the officers at the tops of those grades reach the limit of service prescribed by the law, thereby necessitating considerable elimination each year.

In other words the selection boards have followed and will undoubtedly continue to follow a course that might be likened to the law of supply and demand. That is; when no eliminations are necessary there will be very little selection; the more eliminations that must be made the more drastic will be the selection. This policy is best for the efficiency of the naval service, because, when there are sufficient vacancies in a grade to accommodate the natural supply from the next lower rank, there is no logical reason for eliminating good officers simply because they may not be quite so good as some others. Where all officers in the upper grades have reasonably good records, the necessity for rigid selection arises only when the supply in a grade is greater than the number of vacancies in the next higher one, and the excess must be eliminated in order that the proper rate of promotion can be maintained.

There is considerable service opinion that some officers have been selected for promotion who have not made as good rear admirals, captains, or commanders as some of the officers who have been passed over would have made. They hold that the selection boards have made mistakes. There is no doubt about this. To err is human. Therefore, so long as the selection of officers for advancement is left in human hands there will be mistakes. But we certainly must hold that such errors as may have occurred have been honestly made. There can be no good reason for officers doubting the integrity of the personnel composing the selection boards. If we must have selection (and I believe we must) there is no fairer way to do it than to leave it in the hands of our own officers.

There are some who advocate the return to promotion by straight seniority. Do we want this? And have those who advocate this procedure taken heed of what happened to the service when this form of promotion was in effect? Do they realize that all of the evils then attendant will return?

A study of what would happen to the line of the Navy, should we adopt promotion by straight seniority, shows that in fifteen years from now:

(*a*) The average age of the ten *junior* rear admirals will be sixty-one.

(*b*) The average age of the ten *junior* captains will be fifty-six.

(*c*) The average age of the ten *junior* commanders will be forty-nine.

(*d*) Only those can serve long enough in the rear admiral grade to hoist their flag who happen to be the very youngest in their respective Naval Academy classes. And this irrespective of their relative efficiency with their contemporaries.

Do we want to go back to the situation where the senior lieutenant commanders are older than the officers now half way up the captains' list? The answer is, obviously, No. An efficient naval service cannot possibly be maintained under those conditions.

Promotion by seniority gave way to promotion by selection because the conditions under the former system were manifestly unsatisfactory, and detrimental to efficiency.

Some hold that the psychological factor of security is so important that it makes promotion by seniority more desirable than other forms. Can we subscribe to belief in the deleterious effects of some of these psychological factors on the commissioned officer personnel? If so, the feeling of security will promote indolence and mediocrity. From the evidence of books and lectures on psychology, the impression must be drawn that the so-called psychological factors employed in discussions on the effects of promotion by selection on the commissioned officers are not the real elements involved, but are only the type that bear considerable weight when dealing with children and the more or less weak-minded. They are mostly bunk insofar as they adversely affect real he-men such as the large majority of the commissioned officer personnel of the Navy.

Can we then believe that promotion by selection has lessened our efficiency or that it will weaken it if continued? Association with, and knowledge of, many naval officers must convince the unprejudiced that the Navy today, after eleven years of promotion by selection up, is more efficient than ever before. There has been no evidence apparent to the writer of that yellow streak which is implied by those who fear we will become addicted to the evil influence of misapplied psychological factors. As a class naval officers are above such degradation. To feel otherwise can be nothing other than a reflection both on the personnel composing our selection boards and on the personnel they have selected as being best fit for promotion.

The efficiency of the naval service is assured so long as we stick to promotion by selection, regulated by suitable laws.

The defects in our present statutes were not recognized at the time of their enactment, but have come to light with the passage of years. The chief of these are:

1. Incorrect distribution of officers in the various grades.
2. Incorrect ages (now changed temporarily to length of service) at which retirements are forced.
3. No eliminations in the lower grades.
4. Partial immunity given to certain officers, non-graduates of the Naval Academy, from the age in grade elimination features.

These defects if allowed to go uncorrected will, in a short time, produce a situation where:

1. The senior commanders on the list will average forty-nine years of age. The senior lieutenant commanders forty-four years; and the senior lieutenants thirty-nine years.
2. There will be abnormally large numbers of forced retirements of captains, commanders, and lieutenant commanders. These will be irregular from year to year and not properly distributed in the various grades.
3. Officers will serve as commanders and captains for only five years each, as lieutenant commanders for less than five years, and in the three lower grades (excepting ensign which is fixed at three years) for abnormally long periods.
4. The hump formed after the war by the commissioning of the large number of non-graduates of the Academy will be carried on indefinitely owing to the partial immunity of those in it from the age-in-grade retirement provisions, and will block all of certain naval academy classes from reaching the grade of commander.
5. The inequalities in the numbers of promotions and eliminations in the different years due to the humps and to the irregularity in sizes of the Naval Academy classes will result in grave injustices to many officers, solely on account of their position on the navy list.

Most of these defects adversely affect the entire officer personnel. However, strange as it may seem, they were not the reason for the demand for remedial action. This demand was made, and a hearing forced, by the relatively older officers who felt that the age-in-grade retirement proviso of the present law denies to them a fair chance for promotion. Be that as it may, it is not the intention here to go into the relative merits of age-in-grade retirement *vs.* length-of-service retirement. It can fairly be said that no one can justly blame the older officers for desiring to better their chances of promotion. We can and should be thankful to them for forcing the issue, as their persistency brought out the necessity for the urgent changes in the law which finally resulted in the draft of the Britten Bill. This was drawn up by a board composed of Rear Admiral E. H. Campbell, Judge Advocate General of the Navy; Captain R. C. Smith, re-

tired, a recognized expert on naval personnel, and Commander J. S. McCain, who for a number of years had been the officer in the Bureau of Navigation most intimately connected with personnel legislation.

This board took extensive hearings, having before it many officers of all ranks. They made an exhaustive study of the entire situation, especially with respect to the effects of different suggestions on the naval service and on the individuals who compose the line of the Navy. What is more, and so far as known for the first time it has ever been done, the board made a scientific mathematical study of the outcome of the suggested provisions—not only for today, but for many years to come. Of course there were some compromises owing to influences over which the naval personnel has no control; but, in spite of these compromises, the finished product is a bill far in advance of any heretofore produced, and one which, if enacted into law, will be of such inestimable value towards increasing the efficiency of the navy that it deserves the support of the entire service.

It is not held that the bill is perfect. There are a few minor points which any individual who makes an exhaustive, detailed study of the bill might like to have a little different.

Having thus endorsed this proposed bill, it would seem well briefly to discuss just what it does, and wherein it is better than the present law.

1. *It redistributes the personnel in the various grades* by increasing the percentage of commanders from seven to eight, and that of lieutenant commanders from fourteen to fifteen. These percentages are more in keeping with the actual needs of the service. It can readily be seen that the increase in numbers brought about will improve the flow of promotion into those grades and reduce somewhat the number of eliminations of lieutenant commanders. It might even be better to increase the percentage of lieutenant commanders to sixteen or seventeen, as being still more in accord with actual service needs.

2. *It redistributes the time officers will serve in each grade* by changing from age-in-grade retirement to length-of-service retirement and providing that officers shall be retired in the various grades if not promoted prior to the completion of a definite number of years' service after graduation from the Naval Academy, as follows: captain, thirty-five years; commander, twenty-eight years; lieutenant commander, twenty-one years; lieutenant, fourteen years; lieutenant (j.g.), seven years. It thus insures officers who remain in the service a definite rate of promotion and equalizes to seven years the length of service to be spent in each grade.* This is a vast improvement over the provisions of the present law, which if continued in effect a few years longer will produce great inequalities in this respect.

There is one suggestion as to how it is believed this section might be changed to the advantage of the service. It is to reduce the combined time in the ensign and lieutenant (j.g.) grades from seven to six years, and to increase the time in the captains' grade from seven to eight years, leaving it seven years in all other grades. There are a number of reasons why this seems desirable:

(*a*) It is held that an officer should be a lieutenant six years after graduation from the Naval Academy.

(*b*) The average age on reaching the various grades (excepting rear admiral) would be reduced by one year—a very desirable consideration.

(*c*) The percentage of captains which must be eliminated each year is far in excess of the percentage in any other grade, thereby imposing a decided hardship on those who eventually reach this rank. By increasing the time in grade from seven to eight years this percentage of eliminations is somewhat reduced.

3. *It provides for selection and elimination in the lower grades.* At present promotion to lieutenant (j.g.), lieutenant, and lieutenant commander is made by seniority. There is no way to get rid of the dead wood excepting by failure on examinations. And we all know that many comparatively inefficient officers can pass perfectly good examinations. As a result of the neglect of the present law to provide for eliminations in the lower grades, we find, on looking ahead, that unless a change is made it will be necessary, within a few years, to eliminate approximately sixty lieutenant commanders annually. This, of course, is an absurd situation. It will be much better both for the service and for the individuals concerned to make many of these eliminations earlier —while those who must go are younger. The new bill will bring this about.

* Ensign and lieutenant (j.g.) considered as one grade.

It is felt, however, that in these lower grades selection *out* is better than selection *up*. We will dispose of the excess either way. But in overhauling these younger officers the process may be likened to the picking over of a barrel of apples. At first it is extremely difficult to sort out the best apples in the barrel, but it is quite easy to pick out the few that are spotted. So with the younger officers. They will not have had enough service for the selection boards to pick out *the best*. But the least desirable will be easily discerned. In fact, the selection up process for these younger officers will only result in eliminations at the tops of the lists, while an advantage of selection out in these lower grades is that when an officer proves himself undesirable or inefficient he can be eliminated *immediately* and not left for several years, maybe, until he reaches the top of the list.

4. *It smooths out the inequalities of promotions and eliminations,* which humps and irregularities in the sizes of Naval Academy classes now produce. Under the present law we are approaching a condition where many officers are placed at great disadvantage solely on account of the size of their Naval Academy class or on account of their relative position on the list with respect to larger or smaller classes. This situation cannot be entirely remedied. But the new bill does this as far as possible by: (*a*) Guaranteeing to all grades a minimum amount of promotion every year; (*b*) Fixing in all grades a maximum amount of elimination that can take place each year.

These provisions are most important, and secure the gradual elimination of all humps with the least possible violence to the individuals involved, and the least disruption to the service in general. As an example as to how this will work, the class of 1907 is cited. This abnormally large class is a decided hump. Under the present law not only are its members placed at a great disadvantage, but the classes next following are adversely affected. The provisions of the new law prevent an unduly large number of this class from being eliminated in any one year, and, while it throws a certain number back on the next class, still it guarantees to this next class a reasonable amount of promotion. All the humps will be treated likewise.

5. *It withdraws the special privileges now allowed certain non-graduates of the Naval Academy* and places them, insofar as promotion and elimination are concerned, in the same status as the members of the Naval Academy class next following them on the list.

The large number of officers who were commissioned as an aftermath of the war, have been a source of much righteous worry to the officers following them, especially as certain of the officers forming the hump are by present law exempt for long periods from the provisions of age-in-grade retirement. The officers composing these two groups have much on their side, and both must be fairly looked out for as far as practicable. The new bill provides for this contingency in the best possible manner. Those officers composing the hump can feel that, if eliminated, the bill provides a fair compensation; those officers behind them can rest assured that there will be sufficient elimination to insure to them a fair chance for promotion.

6. *It provides suitable compensation* for those officers who are eliminated. Some of the younger officers, in fact, a good many, seem to be opposed to the new bill owing to the elimination features in the lower grades. It is believed they labor under a misapprehension as to how these provisions will work out. They fail to realize that under the present law they will be junior lieutenants from seven to eight years, while the new bill fixes the period in this grade at four years; and that in order to do this there must be some elimination to prevent humps. The Britten Bill is a boon to the *efficient* younger officers as it insures to them a *steady* rate of promotion, without being held up by the dead wood of all grades, as would be the case if straight seniority were followed, and as is the case now in the lower grades (up to commander) under the present law.

The inefficient, or those who are not sure of themselves, may prefer straight seniority, but those who consider only the development of the most efficient officer personnel for the Navy, must surely see that promotion by selection is the only method by which this can be accomplished. However, there will not be as many eliminations in these grades as they imagine. It is also quite probable that those who will be eliminated as lieutenants or lieutenants (j.g.) would, under the present law, certainly be eliminated on reaching the top of the lieutenant commanders' grade. Is it not better for such officers to sever their relations while still young rather than hold on a few years longer?

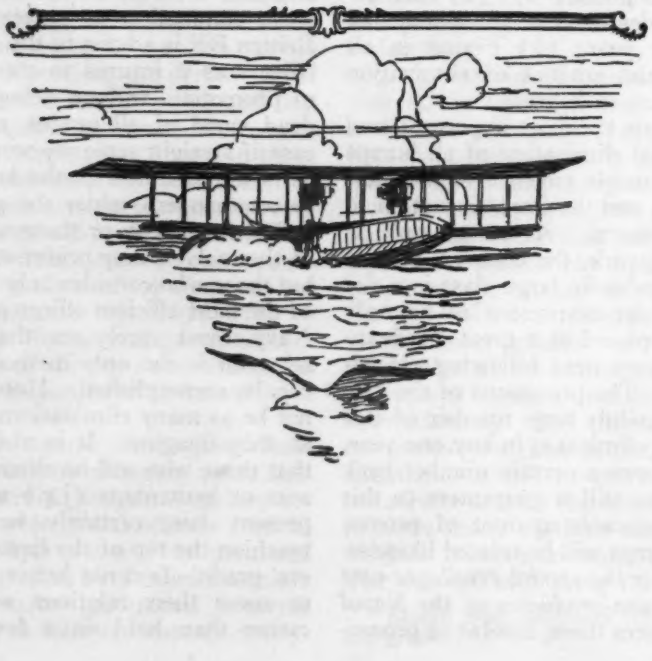
This would seem especially desirable under the new bill which provides for adequate compensation of those who are eliminated.

7. *It guarantees to the government suitable return from those eliminated while young* to compensate for the expense and time involved in their education, and the retirement pay which they will receive for many years. This is done by requiring officers who may be eliminated in the lower grades to be transferred to the naval reserves for a few years where they will be subject to call to active duty in case of war or national emergency. This is an important provision as it bolsters up our weak (in numbers) naval reserve and at the same time provides these officers with funds which should enable them to get a solid foothold in civil life.

A study of these compensation features convinces one that they are liberal and just. In fact they may appear too liberal for the Congress to accede to. However, it can be shown that even so it is cheaper for the government in the long run than will eventually be the case under the present law.

Before any officer actively opposes the passage of the Britten Bill it is recommended that he first make sure of the ground on which he stands. Let him get someone who has studied the relative merits of this bill and the present law to explain to him the differences in the workings of the two. Let him get some unprejudiced officer who experienced the evils of promotion by seniority to tell him about it. If this procedure is followed, it will be apparent to him that if the Britten Bill becomes a statute, the efficiency of the service will be enhanced far beyond what is possible under the present law, and more so than can occur under any other bill that may have been suggested.

The answer to the question, "Is enactment of the Britten Bill desirable?" is YES.



Economics *and the* Navy

By CAPTAIN K. C. MCINTOSH, *(SC), U. S. Navy*

SINCE war ceased to be a matter of the privy purse and began to demand the coöperation of every citizen and the coördination of every resource, a knowledge of the general, basic laws of economics has become a vital necessity to the education of the military services. When peace, with its constructive program, insists upon the conservation of the strength, resources and funds of the treasury, the Navy still has an economic mission to perform. Logistics is the science of preparedness; and preparedness is a matter of peace, not war. A naval officer's career is normally a narrow, straight road of operation running through a wide country which is logistics. Without a knowledge of economics, the landmarks along the road are almost impossible to recognize in time to be of use.

An officer should naturally be familiar with all theories of government and governmental policy, but he should be an adherent of none. The form and policy of the government under which we serve are not ours to decide nor to influence. The people of our country decide these things, and we are their servants. We must understand their policy in order to carry out their orders; but we must be entirely impersonal about it. A naval officer who is a partisan of any specific doctrine has in a material degree missed perfection as an officer and is merely a politician disguised in a uniform.

Many theories of government have considerable following in the United States, and the present has greatly modified the original individualistic ideas of a century and a half ago. We have in our own lives witnessed far-reaching changes in policies. When such changes come about, nothing in our education or belief must hinder our loyal support of them.

Economics is one of the four so-called social sciences; the others being sociology, politics, and ethics. These four sciences are all studies of the causes of human conduct from different angles, of the effect of circumstances upon human well-being. The angle from which the economist views the world is briefly: How do men make a living? How can the labor of making it be lightened? How may a danger of shortage be avoided?

People are prone to consider economics as a development of civilization, a "highbrow," academic study of little or no value to the average man. But you and I, in our daily living at home, prove its laws. In our daily work, we prove or disprove its theories—its laws we break at peril to ourselves and our service. Each lonely savage hunting for shell-fish, every rogue elephant in the jungle, is bound inexorably in his conduct by the laws of diminishing utility, of demand and supply, least social cost, capital, diminishing return. He knows nothing about them as laws, but as a living animal he obeys them or suffers. Economics antedate civilization.

As community life grows, men begin to learn by experience, driven by two forces, *hunger* and *laziness*, to do things by constantly improving methods. When civilization comes, the laws of economics, which are natural laws, grip men tightly. The history of the world with its vanished empires, wars, famines and epidemics, is a record of broken fundamental law. Only recently, however, have the stubborn white races accepted the impossibility of disobeying laws not made by themselves, and striven to learn the law and its correct application.

Now we must pause a moment to obtain a definition of "civilization." This is one of the words so common that its meaning is taken for granted. It is one of those all-embracing words difficult to pin down. Some have called it density of population, which has forced some sort of community organization, but we have in our time seen the spectacle of tens of millions of people exhibiting the most primitive lack of civilization. Some say the industries make civilization; yet in backward China, civilization of a high order is apparent. Some say trans-

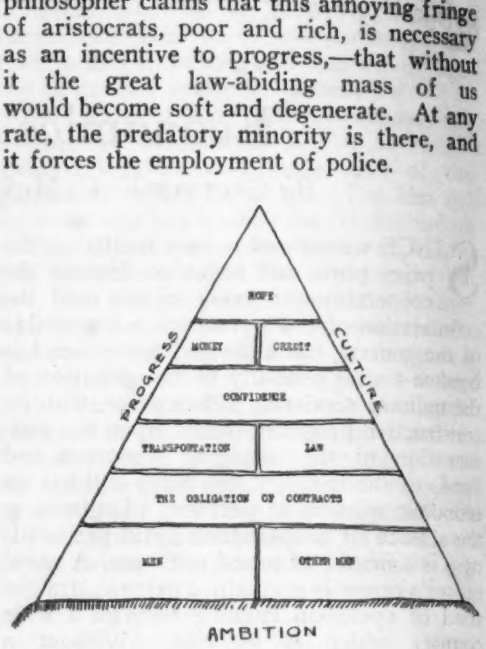
portation, and some say law. All of these definitions can be proved right as far as they go; but all leave us convinced that they are incomplete.

The lone hunter has his feet on the rock of human ambition. He cannot brook the humiliation of his inability to master the great beasts. He wants his children to be safe in his absence. For mutual protection, men drift together. At first, beast-law rules between them—the strong take while the weak give. We still exult when we get "something for nothing." "Something for nothing" is the bait which lures tyrants, proletarians and "wobblies" to ultimate obliteration. The weak invariably grow stronger both in numbers and in self-respect, and demand value received for their contracts and services; so the first sign of emerging order is what is known as the "obligation of contracts" which all men except the noble aristocrats at one end and the laboring aristocrats at the other accept. This obligation becomes the immutable custom.

Once assured of the inviolability of a bargain, two more stones are laid in the mounting temple of civilization, side by side: The law under which business is carried on; and the transportation which makes commerce possible. As these are firmly laid, men gain confidence. They decide upon, use and confidently accept money. Inspired by confidence, they extend and accept credit. As capstone of the pyramid, they now find the essential incentive, hope for the future and assured comfort for posterity. Civilization is now established and complete, even though primitive and backward. The three sides of the triangle are the primal *ambition, culture* which follows the growth of the law, and *progress,* which outlines transportation and money.

Of the nine stones in this edifice, four are peculiarly the province of economics, i.e., law, transportation, money and credit. Thus, upon observance of the laws of economics, rest the confidence and the hope of mankind.

No civilization has ever been 100 per cent civilized. There is always a "something for nothing" minority, either at the top or the bottom of the social scale, to whom the obligation of contracts is meaningless. This is inevitable, for nothing alive can forever remain in balance, but must have swaying boundaries. At least one philosopher claims that this annoying fringe of aristocrats, poor and rich, is necessary as an incentive to progress,—that without it the great law-abiding mass of us would become soft and degenerate. At any rate, the predatory minority is there, and it forces the employment of police.



Nations, which are collections of individuals, follow the psychology of individuals. Nations, moreover, when compared to the individual men, are young and undeveloped entities with imperfect tradition. So, as civilization brings world communication, it also makes armed forces a necessity if there is to be any peace at all at any time. Navies in this day and age are not the parasitic organizations some people prefer to believe them. They are economic necessaries, and to a large extent, producers. Navies do what people wish to have done, and perform the duties for which they are paid. No sane reasoner can class them as parasites when viewed from that unchallengable angle. To thoroughly prove this point, however, we can be specific.

We can divide the economic life of the nation into two parts, roughly: national, in its relations with other countries, exterior or major economics; and individual, between citizens, cities and states, interior or minor economics.

The Navy is first concerned with major economics. Nations are not yet law-abiding. It is a short span of years since they began to try to be so; and lawful conduct is yet only too often inclined to depend upon expediency and strength. Even in peace, far-flung trade may be subject to duress and un-

fair treatment; so, although the Navy's *art* is war, its *work* is trade.

Commodore Preble's squadron was a small and inexpensive one. Before it was built, the commerce of the world, including our own, paid toll to the Barbary States. This toll was a dead loss, both in actual payment without return and in stifled trade. Africa itself was an economic drag on the rest of the world. In 1921, which was not a year of much world wide prosperity, Africa's foreign trade, incoming and outgoing, totalled $9,648,380,914 in the first eleven months of the year. Preble's little, cheaply-built fleet produced every dollar of that trade.

Perry's ships in 1854 represented an investment of perhaps a quarter of a million dollars. Between June, 1921, and May, 1922, a panic year, Japan's foreign trade mounted to more than half a billion. Perry's guns blew that trade into existence.

Similar instances might be multiplied—all for foreign commerce only, exterior figures. There are still many unthinking Americans who claim that to the United States foreign trade is not necessary,—who like to boast that we could shut up our country and prosper while the world starved. But we know in the Navy that foreign markets are indispensable to progress, vital to compliance with economic laws such as "least social cost," and that without the export of the surplus of quantity production (itself largely inspired by foreign trade) living costs at home would climb beyond the reach of many and the little comforts and "niceties" of living would be impossible for most of us. At times, foreign trade at an actual loss can lower costs at home and still produce profits. A country without foreign trade has inevitably a low scale of living.

We also know that foreign trade is unstable unless we can handle it ourselves. We suffered in 1915 because we had business to transact and could hire no ships to do our hauling. A trading country must have a trading fleet. We find that while the rule in war time is "No Merchant Marine, no Navy," in peace it becomes "No Navy, no Merchant Marine." One cannot thrive without the other. We support the merchant fleet in commerce, they support us in war. Not a dollar of American freight and insurance has ever been collected that the Navy did not help earn.

As for the interior, or minor economics of the nation, no lengthy exposition of the Navy's concern therein is needed. Aside from our disbursements of about a quarter-billion dollars a year, we turn out thousands of trained artisans who, without Navy training, would in large percentage have remained unskilled or semi-skilled labor. For one small instance, how many third and fourth-enlistment bakers are there in the Navy? Few—almost none. The demand for bakers in civil life is greater than we can fill.

Among the organizations of the country which have developed the science of purchasing to a high point the Navy stands second to none. Navy purchasing must be scientific, for its very bulk, if unwisely administered, is sufficient to upset the market in a great many lines—shellac, for one example. The Navy's deal in wool during the war is still remembered by civilian experts as a master-stroke, millions of pounds being purchased without raising the market and millions of pounds sold after the emergency without breaking the market. In transportation we have not as yet progressed as far; but we may still hold up our heads in the shipping world. We are at least abreast of most of our contemporaries and gaining ground slowly.

Navy manufactures must serve two masters: first, we try to obtain the needed articles at the minimum cost to the taxpayer; second, we must avoid interference with any civilian enterprise. Our overhead is necessarily great and is sometimes questioned. However, our cost accounting system is one of the most complete in existence, necessarily so in view of the Budget Act; and we charge ourselves with all our overhead. Many of the civilian concerns showing apparently much lower indirect charges would not compare so favorably if they accounted as closely as the Navy does. Navy manufacturing is also, in many localities, an important employer and a real factor in community life.

The Navy's entire reason for existence is summed up in that word, *preparedness*. Not for war merely, although that of course is understood. War, however, is but the continuation of conflicting peace-policies after peaceful means of adjustment have failed. Our duties in peace are just as vital as those in war. When war comes, appropriations are had for the asking; but unless we have prepared in advance, the biggest appropriations will buy little safety. Large appropri-

ations for the armed forces in peace time are impossibilities in every peaceable and democratic country. We may confidently expect much less money every year in peace than we would like to have in order to feel comfortable. However, we are not paid for feeling comfortable. We are expected to produce preparedness, and to do it with such money as our masters, the people, see fit to allow us. This is right and just—it is their concern, and they must always have the final voice. Herein lies the necessity of educating ourselves as business men. A fool can plan and buy with an unlimited purse. We are supposed to be better than fools.

Our N.S.A.F.[1] and R.M.N.A.[1] are our most powerful weapons against high costs; but to use them intelligently we must have some knowledge of how and when to buy wholesale, how and when to live hand-to-mouth. In short, we should know the business cycle, both annual and absolute. The annual cycle is the main one to consider in the purchase of perishables of daily use. It must be absolutely applied in the purchase of provisions, for example. For non-perishable material, purchase at the ebb of the absolute cycle is made possible through N.S.A.F. and subsequent cramping by excessive inventory avoided through R.M.N.A.

Logistics has been defined as "that branch of military science which embraces all details of supply and transport and covers all activities up to actual battle." Logistics is a military study; but strip it of its uniform, and logistics stands forth as economics and nothing else. It is governed by the same laws, holds out the same rewards to the wise and the same chastisement to the fool.

The Navy's crucial test comes in war. The Navy's almost constant exercise is intervention, small or great. No war, trivial or important, was ever waged without an economic basis. No war was ever won unless that basis was sound. The trade and financial data of a possible opponent, when translated by a sound economist, form the best possible index of future peace or approaching trouble. At one time not many years ago, a great many military men watched the copper market with anxious eyes. When certain firms began to sell copper by the shipload, the military and diplomatic world drew a mighty breath of relief, for a disastrous war had been at least postponed and probably avoided. One war, narrowly averted several years ago, fell through largely because of the unostentatious movement of thirty tramp colliers.

Our entire life in the Navy is a study of economics, interior on shore, exterior afloat. If we know the meaning of a stock quotation or a bank rate, six lines in a foreign paper may give us news of coming events that the most expert spy could not obtain by other means. If we know our business at home, we may not only save hundreds of thousands of dollars in taxes during our career; but we may be of immeasurable benefit to the preservation of peace and the upbuilding of the nation's trade.

[1] Naval Supply Account Fund, Reserve Material Naval Account.

Some Aspects *of the* Present Pay Bill

By Lieutenant Commander J. P. Bowden, *U. S. Navy*

As FLEET concentration for 1927 passes into naval history with the thoughts still fresh in our minds of the innumerable lessons learned in connection therewith—the gunnery, engineering, tactical and logistic problems that arose; the training and contentment of personnel in its numerous phases and the many other everyday problems of our naval lives that were settled or that were attempted to be settled in the various ward rooms and steerages of the two fleets; it seems not amiss at this time to bring forth for public discussion and perusal —one of our "family skeletons"—"The Pay Bill." Or transposing the subject to parliamentary seagoing vernacular—*Why should a married officer draw more pay than his corresponding bachelor brother officer?*

For a few years following the period from June, 1922, when the present pay bill became a law, there were two sides to this question, but in later years as the provisions of the bill became better known, it is believed that the service as a whole saw the injustice done the bachelor officers by the present pay bill and it will now give its silent support to any change in this law as long as the married officers own stipend is not reduced. Rather than "rock the boat," however, a large majority of the married brethren desire the *status quo* to remain, thus keeping the bachelor officer out on that famous limb—or offering him the other alternative of acquiring a wife and other appurtenances, thereby entitling him to the extra $150 more or less per month.

With the recent creation of the interdepartmental board in Washington to investigate primarily the promotion situation in the Army, Navy and Marine Corps, it is believed that one of the many vexing problems connected with personnel that this board will have to face will be that of the inequalities manifest and still in existence in the operation of the Joint Pay Bill of 1922. It is not believed that any question of permanent service personnel legislation will have the full support of the commissioned personnel until recommendations are made to correct the provisions of the present pay bill.

The final judge of a Joint Service Personnel Bill is Congress, and no matter how laudable or just a bill is that is recommended by an Interdepartmental Board, the final approval will not be given by the legislative branch until the question, "How much will it cost?" is fully answered. The "How much will it cost" will be based, no doubt, on the present 1922 Pay Bill—which, at best, is only temporary, because it is discriminatory and class legislation and hence contrary to fundamental American principles of government.

From the above it would appear that along with a permanent personnel bill should go a permanent and non-discriminatory pay bill, because, along with dissatisfaction of commissioned personnel due to fear of stagnation in promotion for some years to come, is also the equally serious question of nonuniformity of pay. The latter is especially serious, as it concerns approximately one half of the commissioned line (2,700 out of 5,400 line officers are bachelors) and probably one-fifth of the staff officers (400 out of 1,900 staff officers are bachelors). It is admitted, however, that it affects the junior officers more than the senior officers, as it is believed a very large percentage of the senior officers do not enjoy single blessedness. For this reason, those that shape any pay or personnel legislation should have as a representative a senior officer that can speak feelingly for the bachelor element in the several services—especially for the bachelor naval officers at sea where the discrimination in pay is much greater relatively than in any other of the six branches of the government operating under the present pay bill (Army, Navy, Marine Corps, Public Health Service, Coast and Geodetic Survey, and Coast Guard).

During the winter of 1921-1922, it was the writer's privilege to have command of

the U.S.S. *Palos,* then stationed on the upper Yangtze River, with headquarters at Chungking, Szechuan Province, China, approximately 1,400 miles from the mouth of the Yangtze. River navigation to and from the lower Yangtze had ceased due to low water, rapids, etc., at various points above Ichang, which is about 350 miles below Chungking.

Mail for the two U. S. gunboats stationed on the upper Yangtze—the *Monocacy* and *Palos*—was very irregular and slow due to the fact that it came to Chungking from Ichang, a distance of 350 miles, by either hand pulled junks or coolie runners. These junks and runners were often delayed or robbed by various bandits or "revolutionists" en route.

However, one memorable circular "got through" to us from a certain committee of naval officers on duty in Washington who were evidently in charge of the Navy's end of the then contemplated new pay bill. The opening or closing clause of this circular had the following "catchy" phrase which tended to cheer the spirits of the six isolated officers of the *Monocacy* and *Palos.*—"All hands should get behind the new pay bill, now before Congress. It is not exactly what the Navy wants; but it is the best we can do. Some will get more of an increase than others. *But under no conditions will anyone's pay be reduced below that of the old bill (1908).*" I do not remember the exact wording, but the above is the substance. Thus, we did not give the matter much further thought, but hoped for the best.

Later when the smoke of battle had cleared away and the pay bill was the law of the land, what was the result to these six isolated officers aboard the *Palos* and *Monocacy,* two identical ships, as near alike as two peas in a pod and performing the same duty in the same locality?

	Monocacy (All Married) Total Pay Per Yr.	*Palos* (All Bachelors) Total Pay Per Yr.	*Difference* Pay Per Yr.
Lieutenant-Commander, 15 Yrs. Service	$5,607	$3,969	$1,638
Lieutenant, 8 Yrs. Service	4,038	2,859	1,179
Lieutenant (MC), 7 Yrs. Service	4,038	2,859	1,179
Total	$13,683	$9,687	$3,996

The *Monocacy* officers (whose corresponding rank and service were the same for pay purposes as those of the *Palos*) were receiving a total of $3,996 more a year than those on the *Palos,* because they happened to be fortunate enough to be married. Incidentally, the three officers on the *Palos* were each contributing from $75-$125 a month toward the support of dependents (other than mother or child); but by the provisions of the pay bill they were not entitled to any allowances.

To return to the circular letter.

"But under no conditions will anyone's pay be reduced below that of the old bill (1908)." Let's see how the Paymaster figures.

BACHELORS

Lieutenant-Commander, 18 Years

1908 Bill:		
Base Pay	$3,000	
30% Fogey	900	
10% Sea Pay	390	
Total		$4,290
1922 Bill:		
Base Pay	$3900	
Subsistence	219	
Total		$4,119
Difference		$ 171

1922 Bill reduced by $171 per year the bill of 1908.

Lieutenant, 12 Years

1908 Bill:		
Base Pay	$2,400	
20% Fogey	480	
10% Sea Pay	288	
Total		$3,168
1922 Bill:		
Base Pay	$2,880	
Subsistence	219	
Total		$3,099
Difference		$ 69

1922 Bill reduced by $69 per year the bill of 1908.

The two self-explanatory examples could be further augmented, but instead a general statement will suffice to illustrate my point, viz.: Bachelor officers with twenty years' service or less at sea are now (since June 30, 1922) receiving *less money* than they would have under the old *1908* pay bill; this, because the present loss of sea pay (10 per cent of the old base pay plus longevity) is not offset by the subsistence allowance bachelors are at present receiving ($219 per year).

In the case of bachelor officers with over twenty years' service this is not generally the case; their pay at sea under the 1922 pay bill being more than under the 1908 bill.

This is due to the fact that the 1922 bill increased longevity pay up to as high as 50 per cent of the base pay while the 1908 bill only increased it up to approximately 40 percent of the base pay.

Similar examples could be given to show that in many instances bachelor officers on shore duty with less than twenty years' service receive less than they did ashore under the old 1908 schedule since the present combined rental and subsistence allowance for officers ashore without dependents is less than that they received ashore under the 1908 schedule (Commutation of quarters, heat and light).

Referring again to the Paymaster's figures (paragraphs above) let us see how the 1922 pay bill affects the married officer—as compared to the 1908 bill. For purposes of illustration a lieutenant commander with eighteen years' service and a lieutenant with twelve years' service are again used.

MARRIED

Lieutenant-Commander, 18 Years

1908 Bill:		
Base Pay	$3,000	
30% Fogey	900	
10% Sea Pay	390	
Total		$4,290
1922 Bill:		
Base Pay	$3,000	
30% Fogey	900	
Allowances	1,867	
Total		$5,767
Difference		$1,477

Increase of $1,477 per year.

Lieutenant, 12 Years

1908 Bill:		
Base Pay	$2,406	
20% Fogey	480	
10% Sea Pay	288	
Total		$3,168
1922 Bill:		
Base Pay	$2,400	
20% Fogey	480	
Allowances	1,398	
Total		$4,278
Difference		$1,110

Increase of $1,110 per year.

In other words, the 1922 Pay Bill increased by $1,477 per year the pay of married lieutenant commanders with eighteen years' service; and at the same time decreased the pay of the bachelor lieutenant commanders by $171 per year over the old 1908 bill!

Likewise, the 1922 Pay Bill increased by $1,110 per year the pay of married lieutenants with twelve years' service; and at the same time decreased the pay of bachelor lieutenants by $69 per year over the old 1908 schedule!

Generally speaking the same figures can be used for any grade.

"Some pay bill!" says the bachelor officer.

To pursue our study a bit further the below mentioned greater amounts are received per month by the different grades because they are married, (allowances) except in cases where combined pay and allowances exceed $7,200 per year in certain senior grades with nearly thirty years' service.

	At Sea	*Ashore*
Admiral	$ 123.42	$ 43.42
Vice Admiral and Rear Admiral (Upper)	123.42	43.42
Rear Admiral (Lower)	106.75	26.75
Captain	138.25-156.50	76.50
Commander	136.25-156.50	76.50
Lieutenant Commander	136.50-156.50	76.50
Lieutenant	78.25-136.50	38.25-76.50
Lieutenant (j.g.)	78.25- 98.25	38.25
Ensign	40.00- 78.25	38.25

In all cases the base pay and longevity pay of married officers and bachelor officers of the same rank and service are the same. The increase to the former is in the allowances as shown above.

Statistics today show that it takes $1.72 to purchase what $1.00 would buy in 1912 and facts show that most of the bachelor officers in the Navy are actually receiving *less* money in 1926 than they did in 1912.

Other actual cases of the peculiar workings of the present pay bill come to mind:

A rear admiral (bachelor) or captain (bachelor) with thirty years' service, at sea, receives $6,219 a year; a lieutenant (married) at sea with the same service receives $6,357—$138 a year more than his division commander or captain!

A certain bachelor captain in command of a Navy transport that I happened to be on was receiving less pay and allowances than all his individual heads of departments (lieutenants and lieutenant-commanders) and also less than three of his watch officers (thirty year lieutenants).

A self-explanatory table of sea pay of officers of the Navy, married and single, is shown in the annual Navy Directory. Study it closely; it is an eye opener.

It seems to me that along with the many ward room topics of discussion included under the caption of "What is wrong with

the Navy" "Old Friend Pay Bill" should be placed "Front and Center."

Admitted then that the present pay bill is unfair and discriminatory—in addition, almost socialistic and therefore un-American, what remedy suggests itself?

The ideal solution, of course, would be to eliminate the present allowances for those with dependents and add these amounts to the corresponding present base pay of the several grades, and all hands (with or without dependents) receive the combined amounts as *pay*, at sea and ashore. This would increase the item "Pay" of the six branches of the government now being paid under this bill somewhat. It is believed, however, that this would be about offset, by eliminating clerks and other officials now employed in various branches of the government, whose time is utilized in rendering decisions and writing letters on just who is and isn't a dependent.

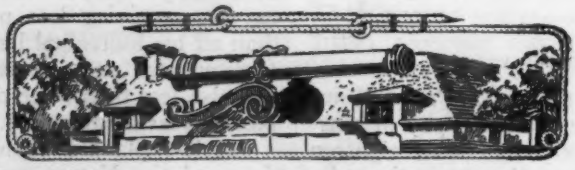
By increasing the *Pay*, the amount of the "Present Allowance" for dependents would automatically, if not legislated otherwise, increase the pay of the retired list which should in justice be done. The last pay bill was a compromise—I understand it was the present bill or going back to the old 1908 Bill—and from the bachelor standpoint it would have been better to stand on the old bill—but somebody had to be sacrificed, no doubt—hence the present Pay Bill of 1922.

The second best solution would be to give the "present allowances with dependents" to all hands both at sea and ashore on active duty, thus putting all officers on a parity. The retired pay, of course, would then remain the same as at present and the only increase would be the small increase in the allowances for bachelors. While this would right our wrong, it would be manifestly unfair to the retired list.

In the study of the present pay bill it is noted that there is no distinction made in the pay of enlisted men of corresponding rating and length of service due to their martial status. Why was this invidious distinction made then in the case of officers? Why not give a married chief petty officer at sea more than his single shipmate and thus be consistent?

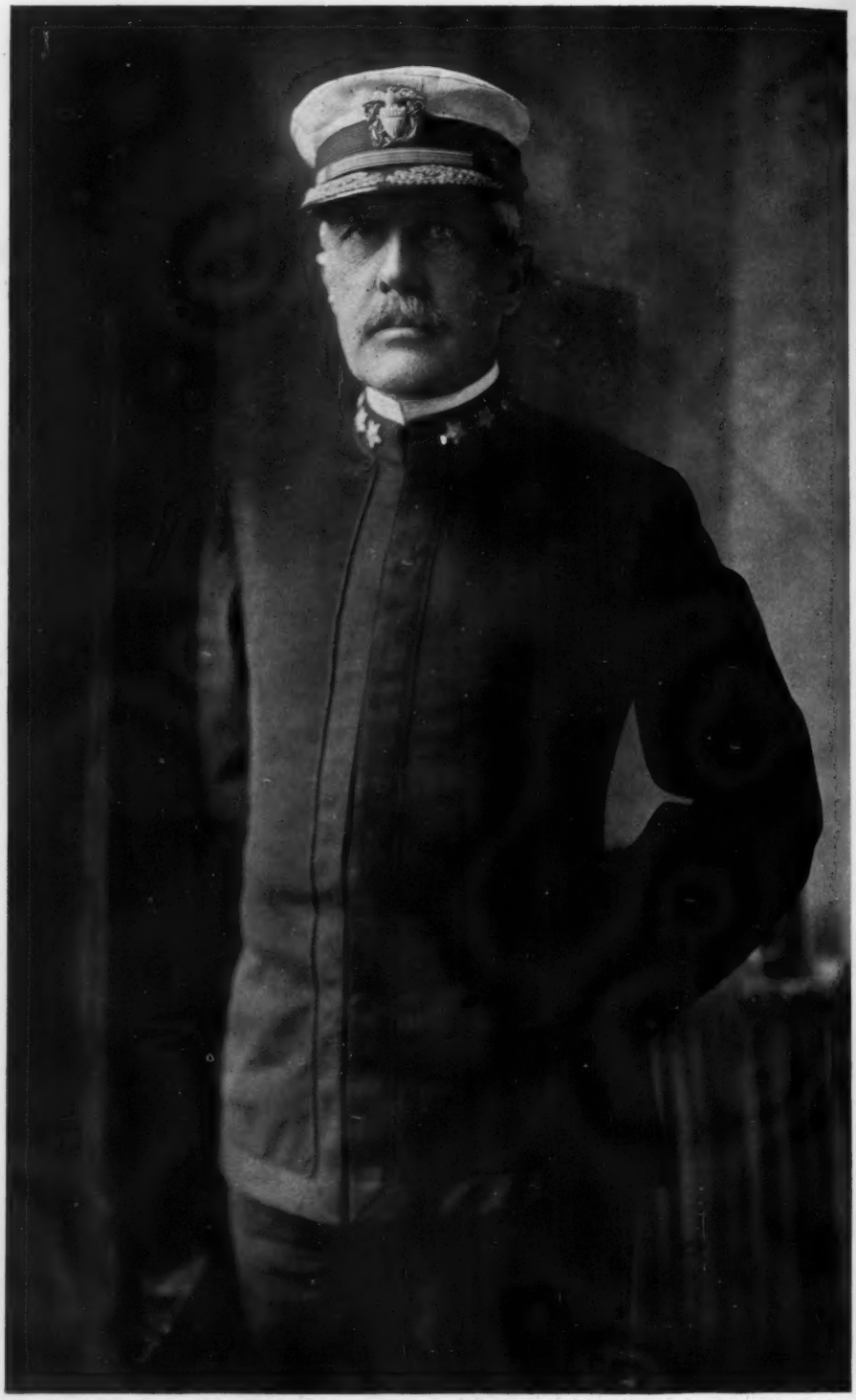
Does, for example, the National City Bank or the Standard Oil Company of New York, pay its presidents and other executives a salary based on whether or not they are married; or according to what they consider their services are worth to their respective companies? Does the paying teller or cashier in any bank receive a larger salary than the president if said president happens to be a bachelor?

Unfortunately in this country, in addition to rank and station, the dollar appears to be the bench mark. Fortunately, however, for the Navy, this dollar bench mark has never permeated our lives. Most of us in the service put all ideas of wealth and financial success behind us when we raised our right hand. When that right hand went up, however, it was our understanding of the contract that our modest remuneration should be for naval duty performed and responsibility assumed, which was to march side by side with rank and length of service and not for raising a family—the latter a laudable undertaking but a secondary consideration in a profession where men "needs must go to sea in ships."



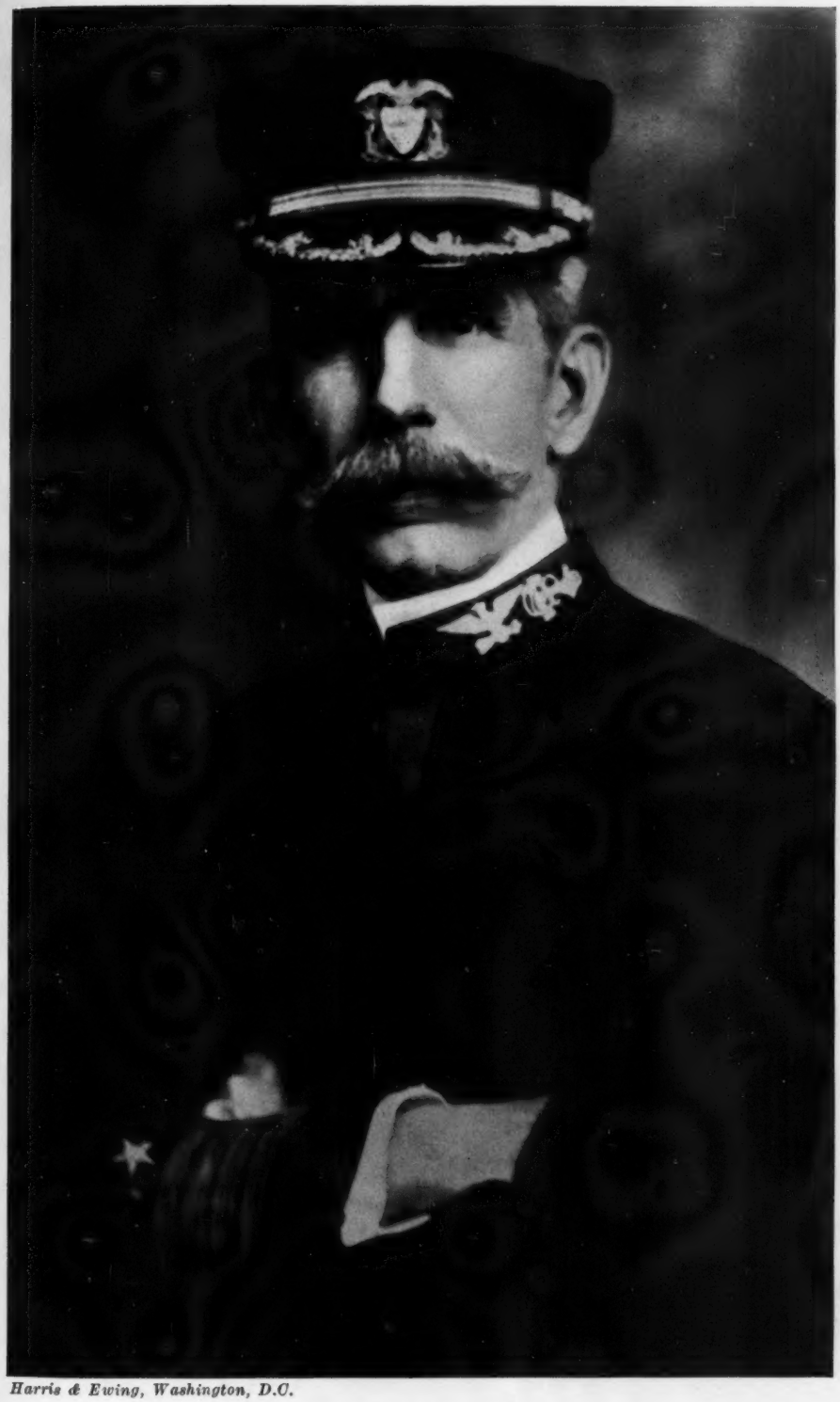
From "The Life of an American Sailor, Rear Admiral William H. Emory, U.S.N.," by Rear Admiral Albert Gleaves, U.S.N. (By Permission).

REAR ADMIRAL WILLIAM H. EMORY, U. S. NAVY
Commander of the Second Division of Battleships from Hampton Roads to the Pacific Coast and Commander of the Second Squadron and Third Division for the Remainder of the Return Voyage to Hampton Roads.



REAR ADMIRAL SEATON SCHROEDER, U. S. NAVY

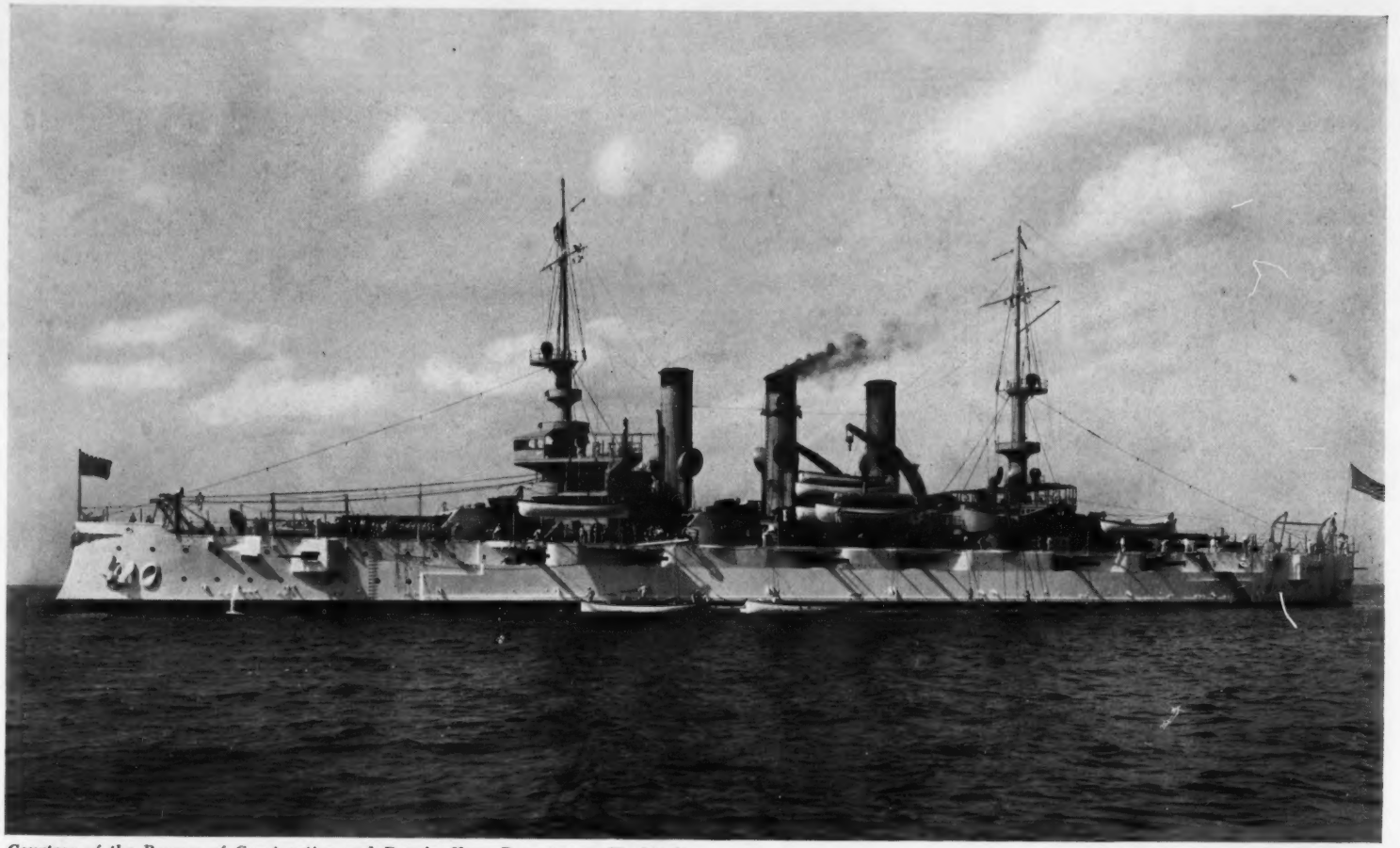
Commanding Officer of the *Virginia* from Hampton Roads to San Francisco and Commander of the Fourth Division from San Francisco to Hampton Roads, being promoted to Acting Rear Admiral upon arrival on the coast.



Harris & Ewing, Washington, D.C.

REAR ADMIRAL RICHARD WAINWRIGHT, U. S. NAVY

He was in command of the *Gloucester* at Santiago. He commanded the *Georgia* from Hampton Roads to San Francisco, being then promoted to Acting Rear Admiral in command of the Third Division for the return trip to Hampton Roads.



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "LOUISIANA"

One of sixteen battleships in the trip to the Pacific. She was one of five of this class to make the trip, the other sister ships being the *Connecticut* (Flagship of Admiral Evans), *Vermont, Kansas,* and the *Minnesota* (Flagship of Rear Admiral Charles M. Thomas, U.S.N.). All the battleships were painted white with spar color above the main deck and the lattice work (basket) masts were not installed until the summer of 1909 after the return of the fleet from around the world. The main battery consisted of four 12-inch guns and eight 8-inch guns.

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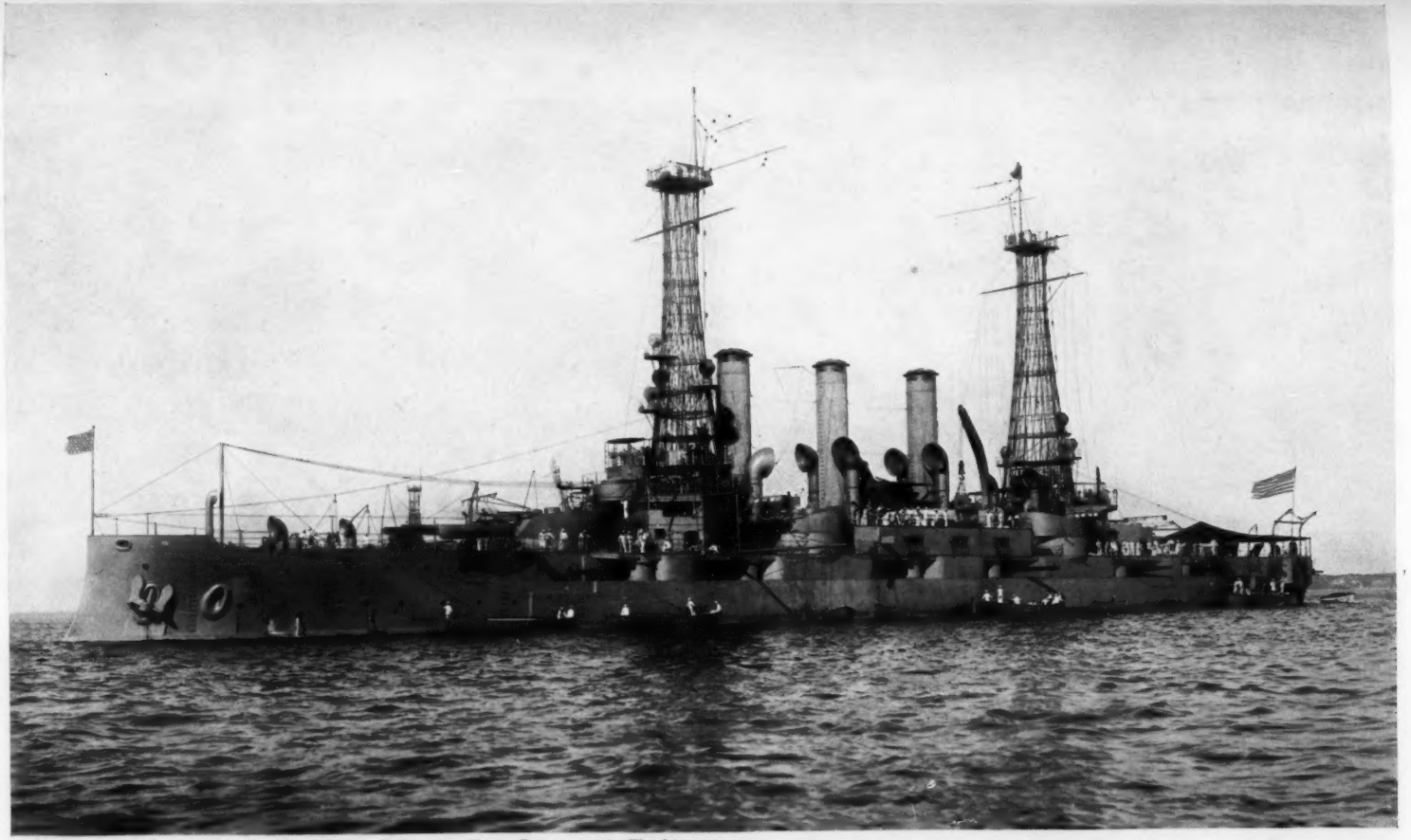
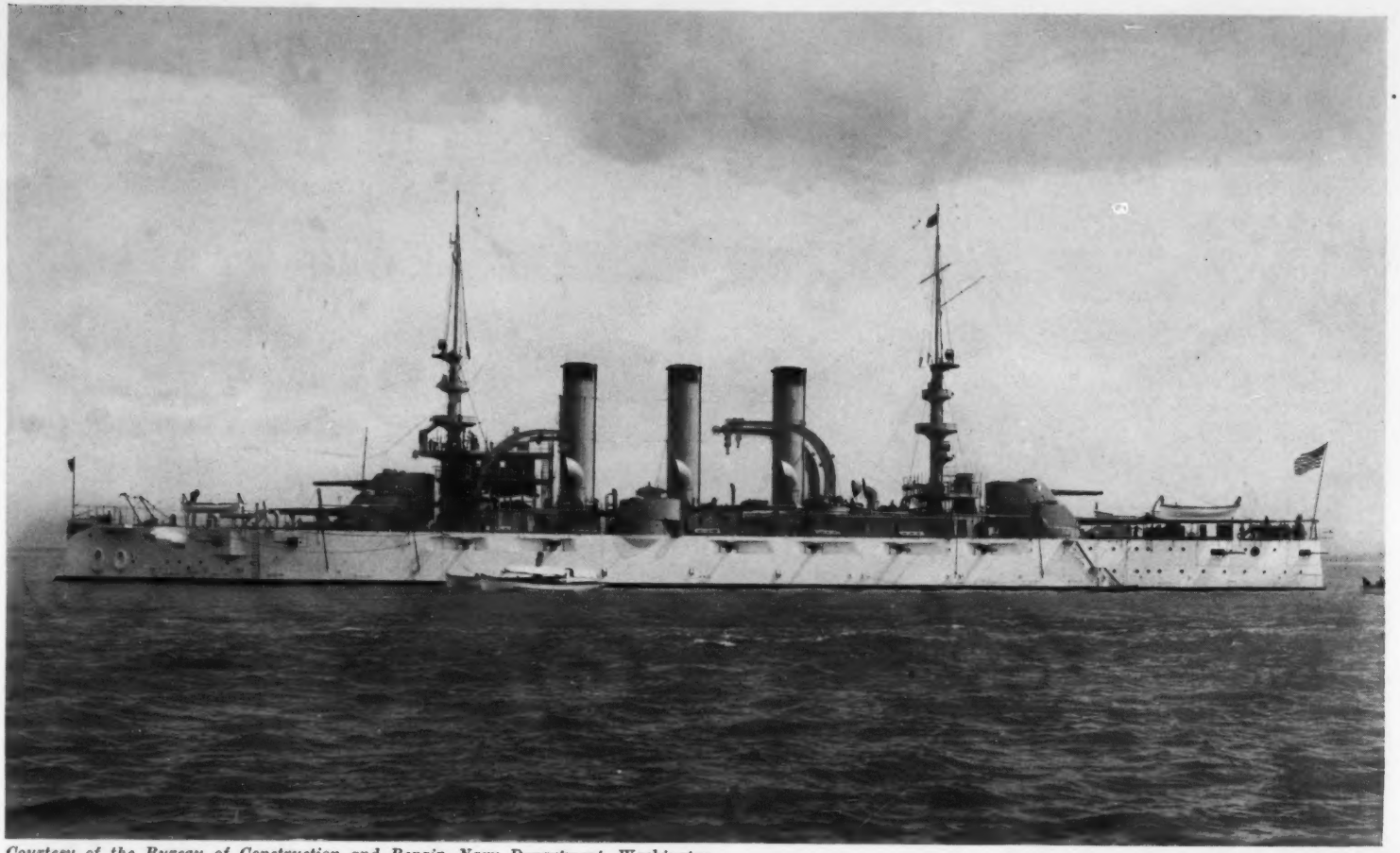


Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

A VIEW OF THE FLAGSHIP "CONNECTICUT"

Sister ship of the *Louisiana,* shown on opposite page, after return of fleet. Illustration shows the newly installed basket masts and the dark slate colored paint known as war color. Another vessel of this class, the *New Hampshire,* was not in commission at the time the fleet departed.



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "VIRGINIA"

As she appeared in 1907 on the trip around the world. She was one of four sister ships to make the cruise to the Pacific. The others were the *New Jersey, Rhode Island,* and the *Georgia* (Flagship of Rear Admiral William H. Emory). Another ship of this class, the *Nebraska,* joined the fleet at San Francisco and returned home to Hampton Roads with the other vessels. Her main battery consisted of four 12-inch guns and eight 8-inch guns. She had one super-imposed 8-inch turret on each 12-inch turret.

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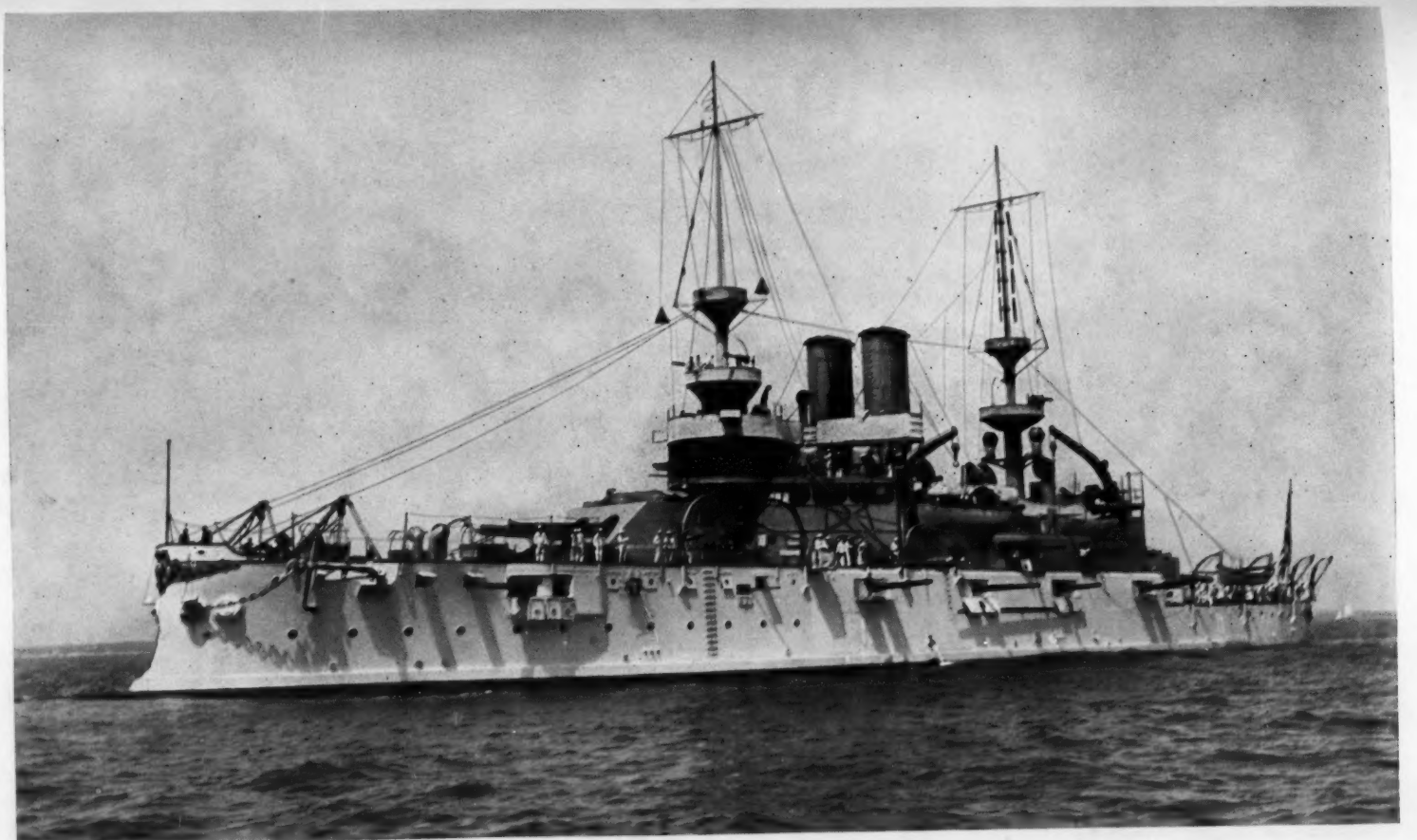
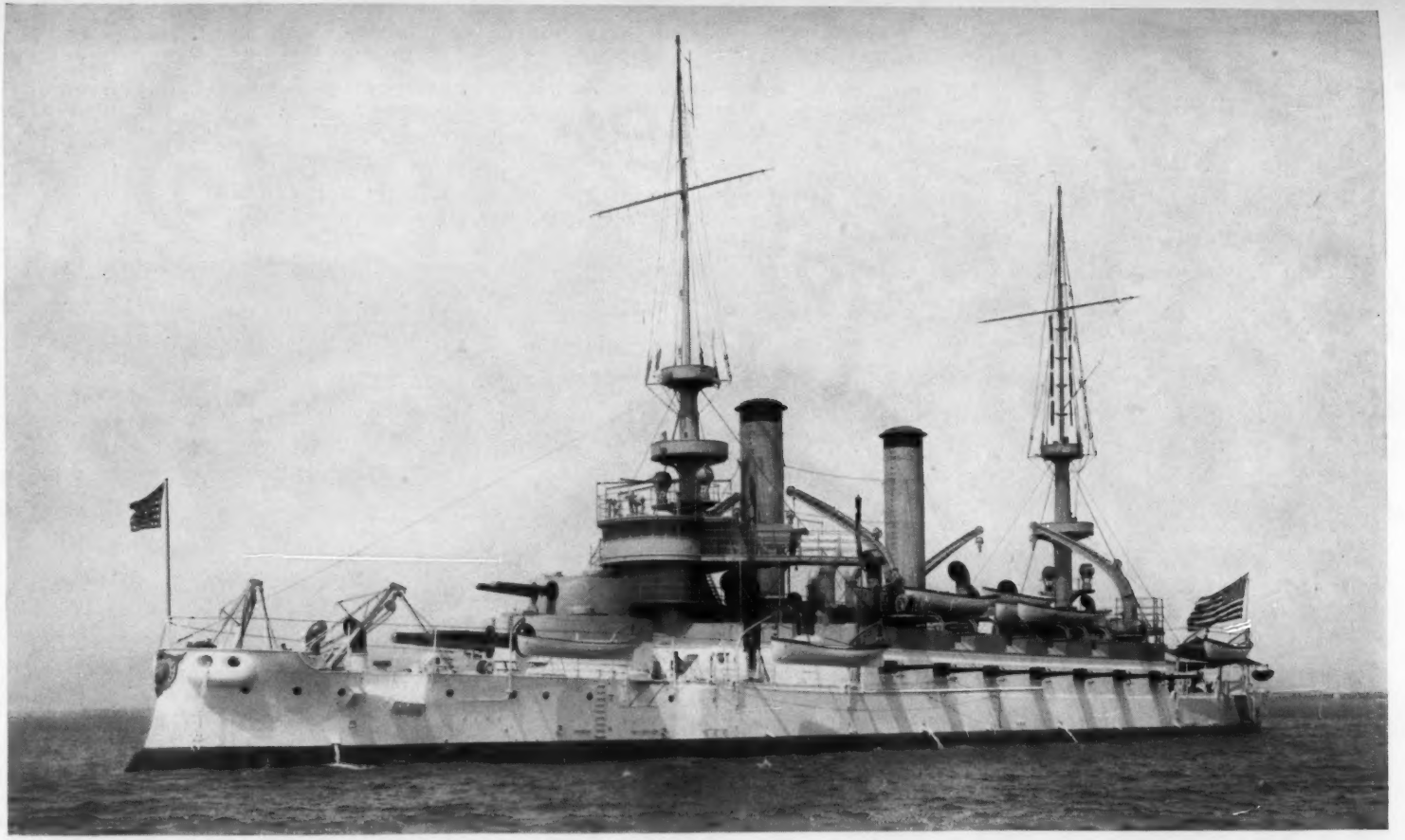


Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "ALABAMA"

There were three ships of this class in the fleet, the other two being the *Illinois* and the *Wisconsin*. The former was the flagship of Rear Admiral Charles S. Sperry for the trip to the Pacific and the *Wisconsin* was the flagship of Acting Rear Admiral Seaton Schroeder for the return voyage from the Pacific to Hampton Roads. The main battery consisted of four 13-inch guns. Her smoke stacks were athwartships. The *Alabama* left the fleet on the west coast and the *Wisconsin* took her place.

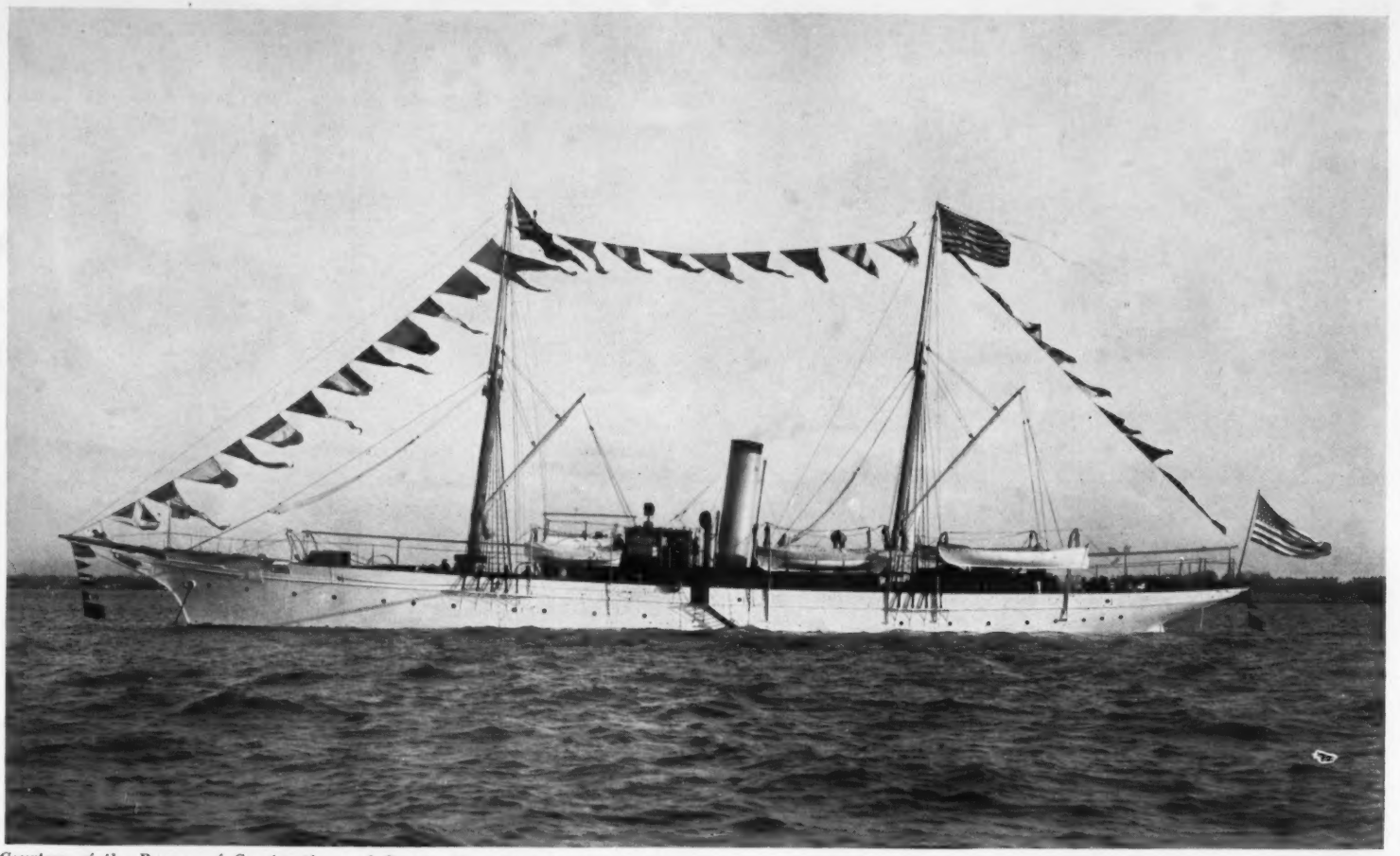
U. S. S. "Maine"
Her sister ships in the fleet were the U. S. S. *Ohio* and U. S. S. *Missouri*. Main battery, four 12-inch guns.



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "KENTUCKY"

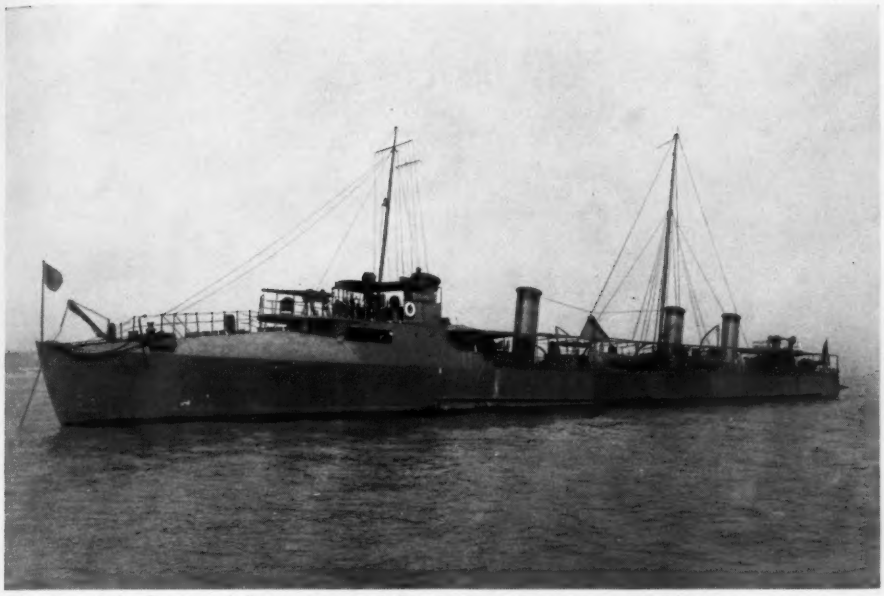
Sister ship of the *Kearsarge,* as she appeared in 1907. Her executive officer on this voyage was the present Commander-in-Chief of the U. S. Fleet, Admiral Henry A. Wiley, then a Lieutenant Commander. This type of ship was the first with the 8-inch super-imposed turrets. She was the flagship of Admiral Evans in 1902-04 when he was Commander-in-Chief of the Asiatic Fleet. Many distinguished officers, who afterwards became Admirals, served in her when in the lower grades, not less than five becoming Commanders-in-Chief. Her main battery consisted of four 13-inch guns and four 8-inch guns super-imposed.



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

THE FORMER YACHT, U. S. S. "YANKTON"

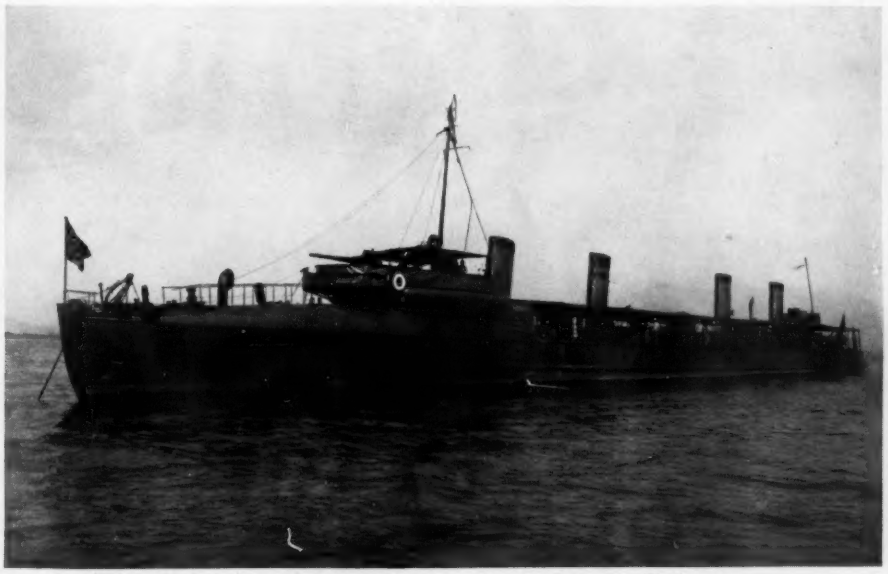
As tender to the flagship she accompanied the fleet around the world, commanded by Lieutenant Walter R. Gherardi, U.S.N. She did her trick and weathered the two typhoons through which the fleet passed north of Luzon and east of Formosa on the return portion of the voyage.



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "WHIPPLE," SISTER SHIP OF THE U. S. S. "TRUXTON"

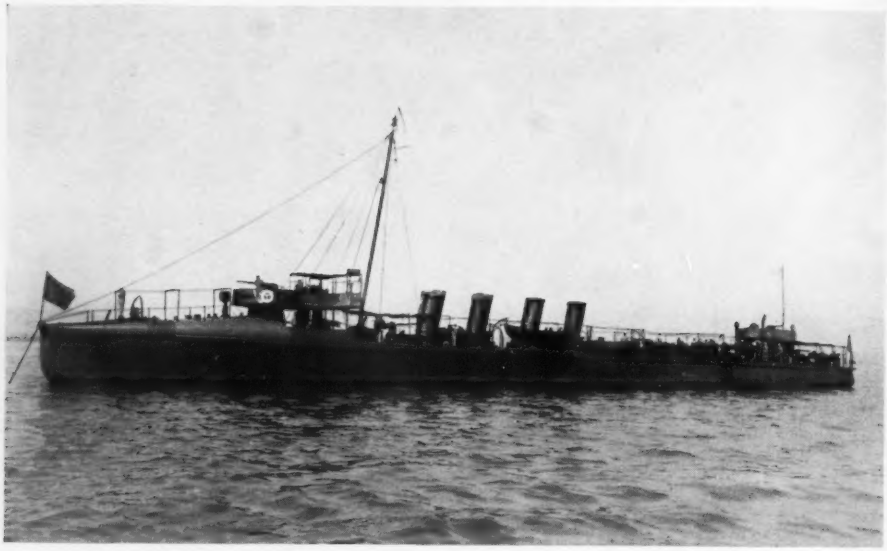
These were two of the six torpedo boat destroyers under command of Lieutenant Hutch I. Cone who upon arrival at San Francisco was selected by Rear Admiral Sperry to be on the latter's staff as Fleet Engineer. When the fleet returned home eight months later Cone was made Engineer-in-Chief of the Navy with the rank of Rear Admiral—from Lieutenant to Rear Admiral in sixteen months. Cone is now retired as a Rear Admiral and is treasurer of the Daniel Guggenheim Fund for the Promotion of Aeronautics, Incorporated. The *Whipple* was his flagboat.

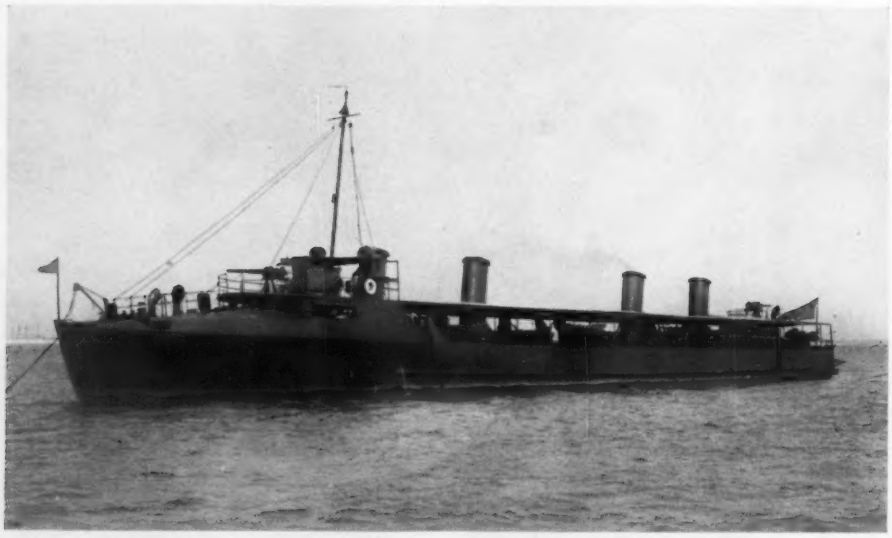


Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "HOPKINS"

Sister ship of the U. S. S. *Hull*. These two boats were also a portion of Lieutenant Cone's command.



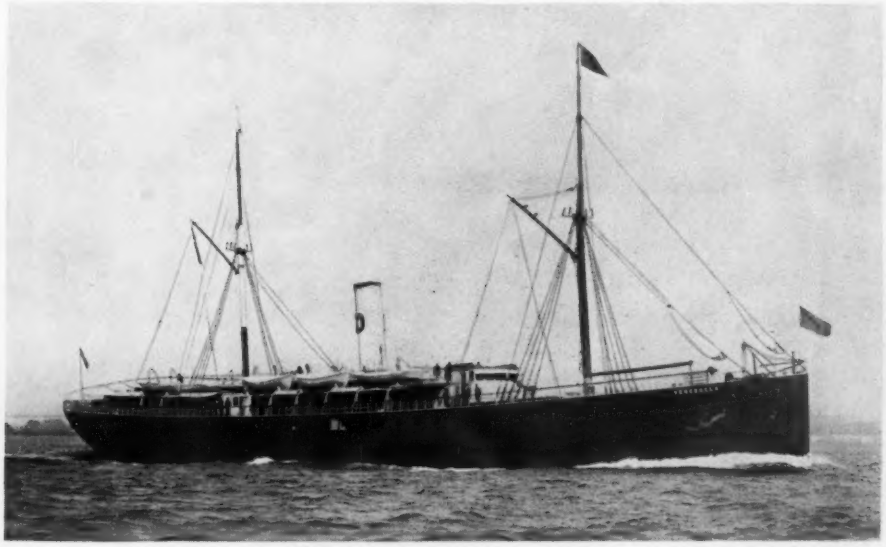


U. S. S. "LAWRENCE" (Top) AND U. S. S. "STEWART" (Bottom)
Two of the six destroyers which made the trip around South America.

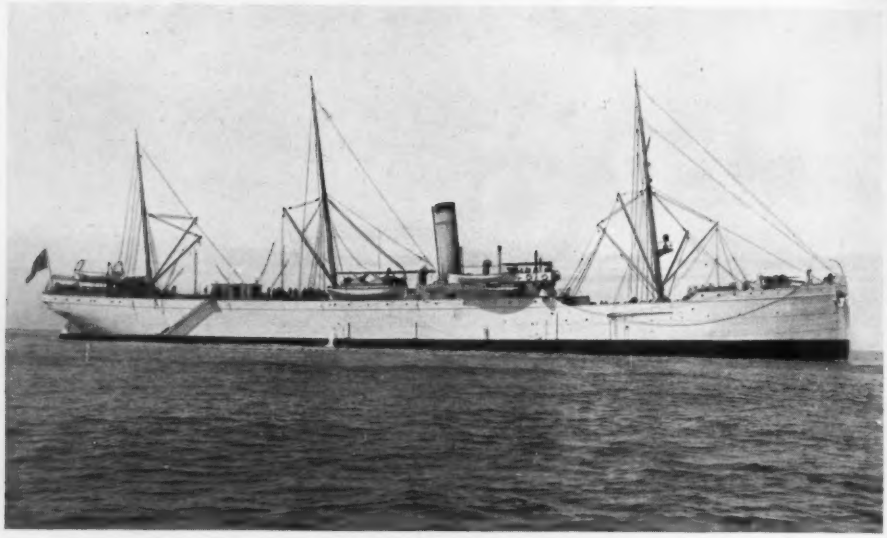
Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

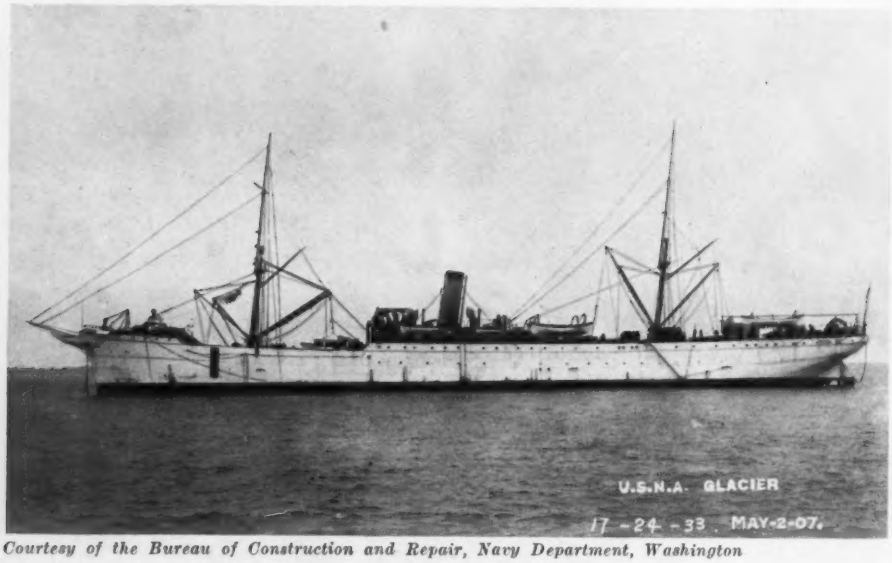
THE U. S. S. "ARETHUSA"

Tender to the six destroyers which made the trip around South America, 1907-08. She was commanded by Commander A. W. Grant, who upon arrival at San Francisco was made Chief-of-Staff to the Commander-in-Chief, Rear Admiral Sperry.



THE U. S. S. "PANTHER"
Auxiliary with the fleet, 1907.



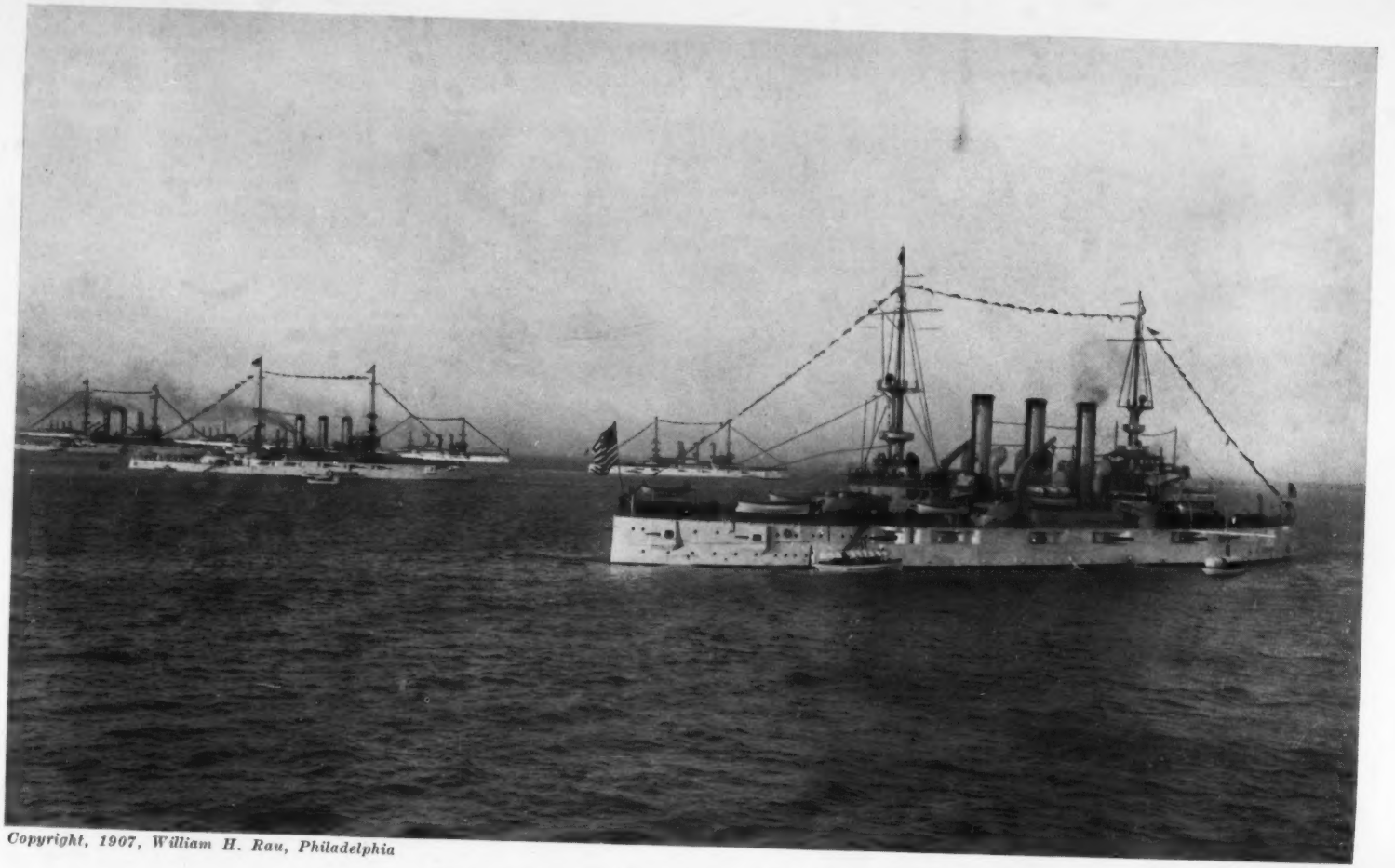


Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U. S. S. "CULGOA" (Top) AND U. S. S. "GLACIER"
Auxiliaries with the fleet, 1907.

THE WHARF AT OLD POINT COMFORT, HAMPTON ROADS, 1907

When the battleship fleet was ready to sail on its trip around the world. The old Chamberlain Hotel, a favorite fall, winter and spring resort and a common meeting ground for the army and navy, was but a minute's walk away. A new Chamberlain is being built near the site of the old hotel which was destroyed by fire after the World War.



Copyright, 1907, William H. Rau, Philadelphia

"Full Dress Ship, National Colors at the Main."

At anchor, ready to be reviewed by President Roosevelt in the *Mayflower* at Hampton Roads in December twenty years ago. Ships were painted white with spar color upperworks (above the main or upper deck) but were painted war color after their return from around the world in 1909. The lattice work basket masts were also installed upon their return. Ship in right foreground is the *Minnesota*, flagship of Rear Admiral C. M. Thomas.

The Merchant Marine

Continued Government Ownership Not Operation

By C. E. GRUNSKY

PROMPTED by the persistent accounts of failure on the part of the Shipping Board to point the way toward the permanent establishment of a merchant marine, I submit the outline of a program which takes into account both the need of the operator and the universal desire to have our government in control of an adequate auxiliary fleet of ships.

This program was first suggested some years ago when there were some 1,400 ships at the disposal of the Board. It was based on the thought that having a certain amount of tonnage in government ownership, continued ownership and control could be secured, without continuance in the shipping business. This could be done by offering government ships to private concerns on such favorable terms, that the private operator could not afford to ignore the proffered assistance.

With this end in view the operator would be told that he could select such government ships as he desired; that there would be no restriction as to their use, he to have as complete control as though they were his own; that there would be no stated charge for their use; that he would be responsible for all expenses of upkeep as a part of operation; but that in consideration of an obligation to be assumed by the government to replace tonnage as the ships became decrepit the operator would pay such amount annually as would amortize the capital represented by the accepted tonnage within the life of the ships involved. The operator would, in other words, pay to the government the annual replacement increment which he would in case of his own ship charge to operation expenses. He would be further assured that there would be no other payments exacted unless his business was profitable, in which event he would be required to pay a share in his net profits on a reduced basis, as would be a proper profit allowance to a private party thus furnishing ships.

The plan would embody certain conditions, as, for example, that no operator should be allowed more than say twenty ships; that the ships must be kept adequately insured; that no company be allowed to take any ship unless its authorized capitalization was at least $1,000,000 with at least $250,000 paid in; that on two years' notice ships might be withdrawn and that in case of emergency as in the event of war or menace, the United States might take possession without notice.

The amount of the annual replacement requirement would depend on the present or remaining value of the ship, and on the probable remaining life of the ship.

When any ship went out of service and was to be replaced, the replacement would be out of any stock of ships on hand, or, if necessary, by new construction. In the latter event the cost of the new ship would afford the starting point for estimating the annual replacement requirement (current depreciation).

Such an arrangement should be welcomed by the operator because it would put capital into his business without requiring him to pledge securities and without any interest charge so long as his venture continued unprofitable, and with only half the sacrifice, or possibly even less, that he would ordinarily have to make on a partnership arrangement if his venture turned out profitable.

The ships built to replace old ships would conform to the most modern requirements. The Shipping Board would soon be out of the operating business and would then have little else to do except to take care of replacements. There would, moreover, be a gradual accumulation of funds out of profits received from successful operators. These funds could be drawn upon as required to pay bonuses to certain operators in order that they might without sacrifice maintain ships on lines where, otherwise, successful operation would be impossible.

world in 1909. The lattice work basket masts were also installed upon their return. Ship in right foreground is the *Minnesota*, flagship of Rear Admiral C. M. Thomas.

Bulwarks *of* Brain *and* Brawn

By CLIFFORD ALBION TINKER

(EDITOR'S NOTE: The author has died since writing this article.)

MATERIAL AND PERSONNEL

DURING the debates preceding enactment of the 1928 Naval Appropriation Bill by the Sixty-ninth Congress, Carl Vinson, a Representative from Georgia, intellectually and morally free from partisanship, and deeply stirred by the niggardly tenor of the bill, declared: "It is absolutely essential that our Navy be in condition and prepared at all times. It must ever remain in a state of readiness, for, in the event of a national emergency, it cannot wait to be prepared, it must be prepared at the time to cope with the emergency."

This statement is gospel, a naval axiom, and as it is a publicly admitted fact that, from the material standpoint, our Navy is not in condition, prepared, and in a state of readiness, one is justified in asking: "Is the efficiency of the personnel, officers and men, in that status insuring the nation, whatever their condition, the utmost fighting value of its commissioned ships?" A logical question, now and ever, for it bears on another axiom: "Ships are tools; men make navies."

From the latter truism, it is sound to conclude that efficient crews may secure results with obsolescent and militarily impaired craft that are beyond the ability of lubberly crews manning ships of formidable type and appointment. Here, doubtless, is an indefensible argument for neglecting the maintenance of a modern, well-equipped, and tactically rounded-out fleet, but it is an irrefutable argument for top-notch efficiency of naval personnel, particularly so in our case, as our naval policy generally has been that of a gain-loving, sentimental, thus short-sighted people, long on funds for memorials and pensions, but short on money for ships and guns.

It is not necessary to turn back the pages of national history—say to the time of Thomas Jefferson, who dismantled all but six frigates of the Navy of his day and sought to defend the nation and its seaborne commerce from the ravages of Barbary pirates and the powerful fleets of England and France by means of those six ships, a number of one-gun river scows, the payment of tributes, and his Non-Intercourse, Embargo, and Non-Importation Acts—to seek proof of the policy cited. Indeed we need go no further back than November 18, 1926, when a sub-committee of the House Appropriations Committee began hearings on the very bill which, on February 24, 1927, was debated by Congressman Vinson.

Representative Burton L. French, of Idaho, Chairman, having called the sub-committee to order, announced:

> In going through the reports of the different bureau chiefs to the Secretary of the Navy for the last fiscal year I came across this sentence used by Rear Admiral Bloch, the Chief of the Bureau of Ordnance: "The total tonnage being limited and the dates of replacement being established (by the famous 5-5-3 Treaty) it appears that the efficiency of the Navy can only be increased by increasing the efficiency of the personnel, by training and practice; by increasing the reliability and accuracy of our present material, and by developing new and better material." This thought, it seems to me, is one that must be the guiding principle of administrative officers of the Navy Department, as well as the guiding principle, in a very large degree, of this committee and of the Congress.

It will be noted that Rear Admiral Bloch included both personnel and material in his formula for increased naval efficiency; that his report had been printed as a public document, and, for more than a year, had been available to all branches of the Federal Government—it was not a new or suddenly developed idea, in fact, the "principle" advanced was made historic by Hermocrates of Syracuse in 413 B.C. when advocating a policy of aggression against an approaching hostile Athenian naval expedition.

The first witness before the sub-committee, Curtis D. Wilbur, Secretary of the Navy, reported:

> The material condition of the Navy is in general good, although it cannot be said to be al-

together satisfactory. The policy of using the major portion of available funds for repairs to vessels of the active fleet, to the exclusion of alterations tending to general military efficiency has been continued. This policy has made it possible to hold in check retrogression but has prevented any substantial improvement. . . . . We can give you the details about it, but that would be a long proposition, there is a great deal of it. . . . . I might say that there are two items there that will interest you—the improvement of the radio, to keep up with the advance of science; and the other is our fire control.

"Those are being kept up?" he was asked.

"They are being deferred," he replied, "I mean those are two big items where we could, by putting in improvements, advance very materially the efficiency of the ships."

Testifying further concerning material, Secretary Wilbur said:

The effect that age of vessels has on the cost of maintenance must again be stressed. The repair facilities afloat are utilized to the fullest possible extent, and the increased repair load which must naturally result from year to year as the ships grow older must be met by increased appropriations rather than by an attempt to overload such facilities. This is especially true if the Navy's enlisted personnel is to suffer any reduction in numbers.

Did the Secretary demand funds to provide the ships with those items: radio, for communications, and fire control apparatus, without which the Fleet cannot be tactically maneuvered and controlled, and accurate, victory-winning gunfire cannot be secured? Did he demand action preventing reduction in enlisted personnel? Did he inform the sub-committee that the Navy was already so short of men that submarines alone had full complements, that battleships and other craft were five to twenty-five per cent undermanned on a minimum peace-time basis? He did not. He had made the case as strong as he could, for he, like all other naval personnel, regardless of rank or position, cannot make requests or demands for congressional appropriations beyond the recommendations of the Bureau of the Budget. There is an executive order against such action, as there is a naval regulation forbidding the personnel to seek legislation. Secretary Wilbur, to his everlasting credit, violated the spirit of the executive order in so plainly pointing out current deficiencies. To have gone further would have jeopardized his case and harmed the cause for which he testified.

Had the Secretary, by demands and tirades against the policy he faced, sacrificed whatever advantage his observance of the executive order gained, it would have made no difference to the sub-committee, its members well-knowing all the distressing material and reduced-personnel deficiencies of the Navy; in fact, the same sub-committee had gone over the details a year previously and was in a large measure responsible for the very faults the Secretary dwelt upon.

Under the circumstances, and despite the Secretary's testimony, it was a foregone conclusion that the sub-committee would send a bill to the House deficient in appropriations for material needed to increase the efficiency of the Navy, and that the enlisted personnel would be held at a figure so that the poorly-equipped ships would be undermanned. The bill was so reported, and is now a law of the land.

Howbeit, in conjunction with its passage, no one suggested the repeal of a section of the "Articles for the Government of the Navy," "passing the buck" from the Congress to the personnel, even to the gates of eternity, namely:

The punishment of death, or such other punishment as a court-martial may adjudge, may be inflicted on any person in the naval service who, being in command of a fleet, squadron, or vessel acting singly, neglects, when an engagement is probable, or when an armed vessel of an enemy or rebel is in sight, to prepare and clear his ship or ships for action; or does not, upon signal for battle, use his utmost exertions to join in battle; or does not afford all practicable relief and assistance to vessels belonging to the United States or their allies when engaged in battle.

This is a Revised Statute of the United States, enacted by the Congress, but nothing therein even hints that the Congress will furnish "any person in the naval service" with a modern ship or ships, armed with modern guns, equipped with the latest models in fire control and radio apparatus, and other efficient material, and a full complement of officers and men to aid such "person" in affording the "relief and assistance" that the regulation quoted so grimly demands.

One does not question the justice or the expediency of the death penalty for downright cowardice, but one must note the injustice of sending brave men to their doom in inferior and short-handed ships. The tragic details of the *Chesapeake* and *Shannon* affair off Boston during the War of 1812 furnished an historical case in point.

Yet the Sixty-ninth Congress, in passing the 1928 Naval Bill, deliberately ignored, in fact contributed to, the unsatisfactory material conditions under which the Navy must function.

Thus the governmental naval policy of the present day does neglect the material situation. The Administration, the Budget Director, the sub-committee of the House, and the Congress are not accepting as their guiding principle the statement of Rear Admiral Bloch, so glibly quoted by Chairman French, that the efficiency of the Navy embraces both personnel and material, but are laying upon the shoulders of the personnel the entire burden and all of the attendant responsibility, meanwhile emphasizing that responsibility by the legal threat of death should the burden prove too great for flesh and blood to bear.

A NEW ERA IN SEA POWER

Despite the untoward circumstances bearing so heavily upon them, it is a service belief that our naval officers and men, singly and collectively, are more efficient today than ever before, and, I am told, the efficiency is so high that no *radical* changes in organization can be made that will promise noticeably increased efficiency. Increase must come through individual initiative in line with administrative procedure now in force. These are strong statements. It may be that they can be substantiated by an examination of the collateral facts.

In the first place, due to major wars and capricious national policies, the United States Navy has had its ups and downs. Expansion in war has naturally been followed by peace-time reduction, but the reductions, almost invariably, have been in the nature of general disbandment, sometimes to an extent making it impossible to maintain a single training squadron. These whirligigs of time and circumstance have had a seesaw effect on personnel efficiency, particularly in the case of officers.

Aside from the first decade following the Revolution, and the eight years of Jefferson's Administration, 1801 to 1809, the lowest period in our naval strength was reached within ten years after the Civil War. From 1875 to 1890 we had no Navy within the meaning of the word. With the latter date, however, began the era of steel, steam, and big guns, its first phase producing the White Squadron of grateful memory—it was this squadron that won the Spanish-American War.

In the period from 1875 down to Dewey's fleet action at Manila, and the chase and mêlée action off Santiago, American naval officers, as throughout our previous history, were good ship-keepers, good individual ship commanders, good disciplinarians, and good fighters. But, with the exception of Admirals Dewey, Mahan, Luce, and Watson, a few captains who had served with Farragut, Porter, and Du Pont in fleet actions of the Civil War, and possibly a number of seniors who had attended the Naval War College, the officers of the time knew little about fleet tactics, and less about naval strategy. The professional awakening caused by the rehabilitation of the material was almost entirely spent in controversies over theoretical design covering rams, monitors, dynamite cruisers, torpedoes, et cetera, while traditional pride alone bolstered up seamanship.

The last gallant squadrons of Spain's age-old sea power were to be the anvils upon which we were to hammer out the genesis of our own. We did not know this when war was declared in April, 1898, but John D. Long, Secretary of the Navy, needing a general staff, called together the advisory Naval War Board of 1898, and to that Board came Admiral Mahan, perhaps the most profound student and master of the strategy and logistics of sea power of all time. By July 4 the deed was done, and the United States had started upon the development of a coördinated sea power which, in a quarter of a century, became the practical equal of that of the British Commonwealth of Nations upon which a great people had lavished their energy, wealth, and colonizing genius through three hundred years of heroic effort.

If the victories at Manila and Santiago began a new era for the American people, they certainly did for the American naval officer. The impetus of the war's demands on personnel and material furnished the actuating impulse of the post-war development in craft and crews, as, for the first time in our history, expansion and not demoralizing disbandment became the Government's naval policy following a war.

From the declaration of war in 1898 down to the hour that the Washington Arms Limitation Conference began its sessions, November 12, 1921, our Navy did not cease

to grow in strength, to keep abreast or ahead of the general adaption of scientific developments to maritime use, to increase in efficiency ships and men in the drive for battle effectiveness by a three-plane Navy employing surface, sub-surface, and aircraft, and their technical adjuncts, and to play its great part in the rise of the United States to the position of the world's principal industrial and commercial power. These tasks were not accomplished without mistakes, professional heart-burnings, and difficulties both economical and political, but they were accomplished.

Inventive genius, scientific discoveries, metallurgical triumphs, and industrial daring, joint enterprises of naval officers and civilians, contributed to the forward push in naval progress and also materially aided in the spread of American influence in the markets of the world. But the chief factor in the rapid development of this country to an enviable place in maritime affairs was the acquisition of those insular possessions which became American territory in 1898. Porto Rico, Hawaii, the Philippines, Guam and Samoa forced the issue, but in 1898 the nation was ripe for the momentous change in its domestic and international policies necessary to insure maritime greatness. We took the step, which, twenty years later, compelled us to exert the balance of power in the World War to maintain free world communications, in other words, "the freedom of the seas."

President Coolidge has said: "Great light is always shed on the question of what ought to be done by finding out what has been done." It follows that if we find out what has been done we may also find out who did it and why. Hence if we conjure up a thumb-nail definition of sea power, note the means used by this country to develop it, and squeeze the political embalming fluid from one or two so-called dead issues, we can evaluate the Navy's part in the national effort and acquaint ourselves with the progress of the professional efficiency of its officers.

From the printed speeches of congressmen, Federal officials, and articles by journalists generally, I gather that to many people in America the thought of sea power embraces one idea: armed force, represented by a navy. But to naval officers sea power means much more; and, as we shall see, their professional efficiency must go far beyond the mere military phase of sea power and into the realm of diplomacy and statesmanship, with a degree of social, industrial and economic understanding coincident thereto seldom required even in the distribution of the highest ambassadorial honors.

The Elements of Sea Power

Stripped of clarifying details, we may define sea power in five words; Production, Shipping, Markets, Colonies, Navy. The principal conditions affecting the sea power of a given nation have been boiled down by Mahan as follows: I: Geographical Position. II: Physical Conformation, including, as connected therewith, natural production and climate. III: Extent of Territory. IV: Number of Population. V: Character of the People. VI: Character of the Government, including therein the national institutions.

These six fundamental conditions of sea power were favorably developed in the United States when the Spanish-American War began. Geographically we were not forced to defend ourselves by land, nor obliged to seek strategical operating bases by land; thus our defense and our offensive attacks were united upon the sea. Our chief geographical weakness was in the tremendously extended water route separating our eastern and western coasts.

We were already an industrial nation, producing raw material and manufactured commodities in excess of the national needs, although our industrialism required products from other lands to complete the cycle of economic manufacturing and to satisfy the luxury-loving demands of a maturing civilization. We both bought and sold abroad. We had huge terminal facilities in the seaports along our eastern coast line, and at strategic railheads on our west coast, connected by water and rail transportation systems with interior urban centers and raw material and industrial regions; we were equipped to expedite large volumes of traffic.

While possessed of ample territory for further increase, we had even then a numerous population, industrious, prosperous, imbued with a pioneering spirit, and, standing behind it, egging it on, a financial organization at once powerful and adventurous. Our Government had protected our producers, manufacturers, and wage-earners by a high tariff, and facilitated our selling and buying abroad by concluding numer-

ous favored-nation commercial treaties. We were, then, quite completely organized to meet the requirements of the first element of sea power; production.

With respect to the second element, shipping, we were disgracefully weak. Those great developments, alloy-steel, and shipyards for fabricating it, brought to the forefront of American industries by the building of the White Squadron, had been almost wholly employed in turning out the Squadron itself. Hence, we find, while in the early eighties we were carrying nineteen per cent of our overseas traffic of one billion, five hundred million dollars in American ships, in 1900, when the war disturbance of our commerce had abated, and our foreign trade approximated two billion, two hundred and fifty million dollars, our merchant fleet was still inadequate to carry more than twenty-one per cent of that trade.

However, we were well on the road to the realization of the third element of sea power, markets, but excepting Alaska, April, 1898, found us without colonies, the fourth element, the main object of which is to permit the maintenance of well-located, suitably equipped, and properly defended bases for the repair, fueling, shelter, and sanctuary of shipping engaged in vital trade in peace and war, and to serve as operating bases for the fleets of the Navy, element five of sea power. The victorious conclusion of the war partly remedied our colonial needs, but, while we had sufficient strength to cope with the Spanish Navy, we did not have enough naval craft of the proper characteristics to insure free movement of our existing sea-borne trade in the event of war with either of several rival maritime powers.

Such were the conditions in 1898. At these crises in the maturing growth of nations, Mahan's sixth condition, "Character of the Government," becomes fatefully decisive. Governmental policies can make or break the exterior elements of sea power. Still, in the case of a representative government, such as our own, public opinion may force a fostering policy toward the consolidation and development of sea power if —Mahan's fifth condition, "Character of the People," here applies—economic or militaristic aggressiveness is a national characteristic. Happily, perhaps to our credit and certainly for the peace of the world at large, we are not a militaristic people.

FORWARD AND BACK

Although peace-loving, we are economically aggressive. Accordingly, the Spanish ships had scarcely struck their colors before we began our march to commercial leadership. We engaged in no orgy of imperialism, we started no treasury-embarrassing policy, but we pursued a continual naval building program calculated to offset the lack of naval bases not supplied by the territorial gains resulting from the War.

Of first importance, economically and strategically, was the building of the Panama Canal. By this means we united our east and west coasts by a fairly direct water route; shortened the sea lane from industrial eastern America to the potential markets of Asia; freed our shipping from the menacing guns and supporting squadrons of numerous bottle-necks of ocean trade; and, while shifting our acute naval problems from the Atlantic to the Pacific, also shifted our intercoastal water-borne freight from foreign to domestic vessels under protective coastwise traffic laws.

We also began a fortified naval base at Hawaii, and instituted the policy of maintaining bases at Guam, Samoa, and the Philippines to protect our Eastern interests, and provided other bases among our Caribbean outposts for the protection of the Canal Zone and the Atlantic seaboard. Under Presidents McKinley, Roosevelt, Taft, and Wilson, these policies were variously advanced. Our overseas trade grew by tremendous strides; we kept reasonable pace with our naval construction, but neglected our merchant marine and worked but intermittently in completing the naval bases at Hawaii and in the East.

We took some backward steps, and were pursuing a number of ill-fated detours from the straight and narrow path to maritime success when the economic, political, and social complications of the World War brought us back to the task and, with tragic abruptness and a challenging pressure not to be denied, literally forced us to make ourselves great upon the seas. Our part in that frightful upheaval need not be detailed here. Suffice to say that we emerged from it with an augmented Navy and the world's second largest fleet of merchant ships. Our defensive and offensive operations, as in 1898, again being united upon the sea, our troops again fighting beyond our shores, our industries shot skyward in magnitude and value,

and the United States became the banker, broker, and meal-ticket holder for a war-starved world.

As in 1899, so in 1919; for the second time in our history we adopted a policy of naval expansion following a war. We went further, for when the War Administration turned over the reins of Government to one of "Normalcy," March 4, 1921, the Congress had digested the admonitory lessons driven home by the war and passed the National Defense Act of 1920, revised and strengthened the Naval Building Program of 1916, and pushed through the Merchant Marine Act of 1920. Through the medium of these acts we had in hand or underway, for the first time since the adoption of the Federal Constitution, a period of 132 years, all of the elements of a tremendous and seemingly permanent sea power. In 1920 our foreign trade reached the prodigious sum of $10,000,000,000, fifty-one per cent of which was carried in American ships, while our Navy, built, building and authorized, was on a scale equaling the navies of Great Britain and Japan combined.

To those who had known the Navy for many years, it seemed that the General Board, created by departmental order in 1900, had reached its majority and realized its goal coincidentally; that the amazing industry of Admiral Mahan and his uncanny ability to analyze historical theory, principle, and fact in terms of latter-day practice, priceless gifts to his country, were at last recognized; and that, without resorting to the repugnant militarism of universal service *à la* Europe, the United States had determined to place herself beyond reasonable attack by establishing adequate military and naval defense forces, rescue her ocean commerce from foreign shipping, and insure her future prosperity against distant depredations by erecting impregnable naval bases at strategic points beyond the seas.

Alas! for practical statesmanship when partisan politicians, represented by "legal" and "best" minds, go slumming for votes and prestige. Attempting to dull the keen edge of European disappointment at our failure to accept membership in the League of Nations, agreeing to Lord Balfour's estimate of our naval requirements, and desiring to throw a sop to the pacifistic fringe of the national electorate, the new administration hustled through the Washington Arms Conference. As a result we are back to the relative position in sea power that we occupied in 1900. To be sure, we are stronger now than we were then, but other powers, particularly Great Britain and Japan, have not, by any manner of means, stood still.

The Conference *status quo* treaty forbidding us to fortify bases in our Far-Eastern colonies has shorn them of their chief advantages as an element of our sea power; indeed, they have become a source of weakness, if not veritable isles of danger. By bending backward in our zeal to idealize the terms of the 5-5-3 Treaty, our Navy has slipped to second place in capital ships, and to third place in auxiliaries, and those units, through the pursuit of "economy," have been allowed to deteriorate until, as Secretary Wilbur's testimony shows, we are relying upon the personnel to hold the bag.

To complete the vicious circle, as a free gift to our trade rivals, making our tribute payments to Barbary pirates in Jefferson's time seem like so much peanut change, the Merchant Marine Act of 1920 has been so far nullified that seventy-six per cent of our $10,000,000,000 annual ocean trade is now carried by foreign shipping. We have become colossal with respect to production and markets, but again weak in shipping, colonies, and navy.

When I look at the present magnitude of the United States, and vision the enormous expansion in population, industry, and political influence which even the next twenty-five years will bring to our flag; when I note the spread of our ideals of political thought in all quarters of the world, and number the forlorn, disconsolate, and semi-submerged governments of small nations looking to us for their guidance and security in a world of chaotic change; it is far and away beyond my comprehension how those who are responsible for the decreasing strength of our sea power can find any satisfaction in pursuing such a tragic policy, or find any comfort in the frankly brutal statement of "Admiral B.," recently made at Geneva, in which the mysterious British "Admiral" calls down upon our heads our own folly in these sentiments:

> It is difficult to understand upon what grounds the United States can claim naval equality with Great Britain when the latter power has such an enormous world trade to protect, and also carries a large proportion of the ocean trade of the former.

EFFICIENCY OF PERSONNEL

A review of congressional legislation from 1898 to the present time, covering the development and recent retrogression of our sea power, as outlined herein, including an inspection of the printed hearings supporting such legislation, provides positive proof that our beneficial colonial and maritime policies have been, in large measure, the work of naval officers. Whenever legislation has been adverse to the growth of our sea power, or supporting legislation has been refused, there is abundant documentary evidence that naval officers have warned or advised against abandoning or retarding the development of our logical interests upon the seas.

While the Naval War College was founded in 1888, it was not enthusiastically supported until after the victories of 1898. It had, however, been the means of indoctrinating the Navy with a broad view of the whole subject of American sea power, and when, in 1900, the General Board came into being as an independent consultative advisory council, that body, supplied with information collected from domestic and international sources by the office of Naval Intelligence, and empowered to call expert witnesses from any source, furnished the Department, the President, and the Congress with a continually expanding and up-to-the-minute policy for creating a fleet and coördinating it with the other elements of sea power then and since available.

The President of the General Board from its creation until a few weeks before we entered the World War, in fact, until the day of his death, January 7, 1917, was George Dewey, Admiral of the Navy. His place in history already won, this great naval statesman gained for the Board the immediate acceptance of its mission by the service, and gave it prestige with the country at large. And through the ensuing years the board has been a balance-wheel, a stabilizer, and a guiding and directing agency; first for the administrative heads of the Navy in the Department's relations to other branches, departments, and agencies of the Federal Government, to civil industries, and in its contacts abroad, and, secondly, for the restless energy and enthusiasm of the personnel of a Navy overwhelmingly mechanical, and who, in a hectic scientific age, must needs be led into channels preserving a continuing and rational progress toward an ideally balanced fleet, properly designed, built, equipped, manned, and properly employed.

To those laymen who might think that these matters overlap or conflict with the established duties and functions of the various bureaus of the Department, it need only be pointed out that the bureaus view their work as a whole with reference to their duty as a part of the Navy Department with subordination to the national policies as a background, whereas the General Board views the questions before it, taking the Navy as a whole to be harmonized with other efforts of the government in behalf of the nation, with a background of the world controlled by interests other than those of the United States and sometimes hostile thereto.

Singularly free from political influence, unafraid to declare its honest judgment on any relevant subject, its decisions founded on the broadest principles of sea power and the duties and responsibilities of the Navy thereunto, its membership recruited from among officers experienced in high command afloat, adjudged to be men of profound reasoning power, and of high professional attainment, its ex-officio members those who occupy strategic posts counted of highest importance in the naval establishment, the General Board constitutes the fountain-head and backbone of naval statesmanship as far as this nation is concerned, doubt it not.

In view of this knowledge I emphatically insist that the most profound and far-sighted statesmanship and diplomatic sagacity to be found in any institution within the purview of the Federal Government is lodged in the senior ranks of the naval profession. The fact that this source of information upon international questions is so consistently ignored by our treaty-making authorities is so much loss to the general welfare. Despite the fact that those bitter, derisive, and galling phrases so peculiarly outstanding in the American development of the English language have been prodigally bestowed upon naval officers of prominence, such as, "swivel-chair admirals," "gold-laced flunkies," "fogies," "bureaucrats," "imperialists," and "militarists," I venture the opinion that future historians will marvel to find that naval officers are the most earnest and logical advocates of peace that our civilization, avowedly peaceful, has ever produced. One example of recent memory may be

cited: Had our government carried out the recommendations of the General Board, say from 1909 to 1914, inclusive, and built the naval craft *in toto* that those recommendations involved, even with our green ambassadors at the courts of Europe—at the time under discussion our ambassadors enjoyed an average experience at those courts of less than one year—our State Department in all probability could have forestalled the World War. With our Navy at that strength advised by the General Board, our influence for peace would have been decisive, just as our contribution to the allied cause, after we had become tangled in the web of war, was decisive for victory.

Although it had increased mightily the knowledge and efficiency of numbers of individual officers, it was not until 1912 and 1913 that the Naval War College was fully appreciated by the Navy as a whole. During those years its graduates, scattered throughout the Bureaus of the Department and detailed to command and staff duties with the fleet, became the leaven which raised the standards of professional knowledge and aspiration above the mere shipkeeper, navigator, and disciplinarian stage. By instituting junior as well as senior classes at the College, the whole fabric of the Navy soon became permeated with the influence of a ripened naval scholarship. This was a telling influence when we entered the World War, as War College graduates went to the planning sections and boards of the Department, to responsible administrative and command berths in the fleet, and to similar positions with the shore-base and floating organizations in the War Zone.

Since the war these same officers have reached command and flag rank and are now the dominating influence behind the drive for efficiency actuating the whole Service. Their numbers are being constantly augmented by new graduates from the college, while that institution has become the foremost of its character in the world; it has promoted a new departure in the naval profession, the progressive education of officers for the exceedingly responsible and exacting duties of "high command."

The Bureau system is an old and tried administrative feature of the Navy Department. The Bureaus, from time to time, have been changed and their number increased to keep pace with the growth of the Navy and with the progress of science and industry affecting the character and operation of the Fleet. That the system is an efficient one is best illustrated by the ease with which the Bureaus expanded to meet the unprecedented demands of the World War. The material, personnel, technical, and fiscal bureaus coped with these tremendous tasks without breakdown or reorganization; they simply expanded, did their work, and settled back to normal enrollment after the emergency came to an end. I maintain that there cannot be any serious question concerning the efficiency of the bureaus today, for they are now headed by executives who handled the war problems and manned by those younger officers who still find themselves tingling with the professional urge of the war effort.

If the officers detailed to the Navy Department are efficient, the same can be said of those aboard ships and at shore stations. All are members of one body, trained at the same institutions, and striving for the same high goal. In this connection, I have recently read sharp criticisms of the Naval Academy, the source of line officer recruitment for the service, in which the administration, curriculum, instructing staff, and the midshipmen have been roundly scored. The burden of this assault seems to be that the Academy is an unsatisfactory institution for imparting to its students "a groundwork of educational fundamentals upon which experience afloat may build the finished naval officer," which is officially stated to be part of the Academy's mission.

Paraphrasing the "graduating" sermon preached by Captain Sydney K. Evans, (Ch.C.), U.S.N., to the Class of 1927, and with which I am in hearty agreement, it is undoubtedly true that there are weak spots of varying gravity throughout the Acadamy, administrative, pedagogic, and academic, and a number of discrepancies in technical laboratory equipment, all of which should, and of course will, be corrected. Doubtless the same degree of proficiency in such subjects as navigation, seamanship, mathematics, ordnance, engineering, aëronautics, English and modern languages, attained by the recently graduated class, could have been attained at other institutions. It is possible that at institutions other than the Academy these graduates might have attained even higher proficiency in the subjects mentioned, but if proficiency in these subjects alone is the goal of four years' ef-

fort at Annapolis, then, in the writer's opinion, their study *ought* to be pursued elsewhere and the Academy abolished.

Said the Chaplain: "The real Naval Academy is invisible—a thing of the spirit with its ideals and traditions of truth, honor, duty, loyalty, courage, initiative, chivalry, and self-sacrifice." The people of this country should thank their lucky stars that this is true. It is not a sentimental "blurb" by an emotional "sky pilot," for the indoctrination of these spiritual attributes constitutes the most practical phase of the midshipman's whole course at the Academy. Without such attributes, deeply implanted in mind and soul, the naval officer, to whom leadership must be the pearl of great price, is of little use to the service, even although his brain be jammed to the bursting point with technical data and lore.

This year's Board of Visitors, reporting to President Coolidge, closed their report with this paragraph:

> It should be borne in mind that a naval officer's education does not end with graduation from the Naval Academy but continues throughout his entire naval career, and that for every advance in rank he is required to pass a searching examination.

How true this is! And not only are Academy graduates qualified to take their places in the fleet and begin, with few theoretical academic handicaps, their practical education as naval officers, but once started on their careers they may specialize in the scientific and technical branches of the service in aid of which postgraduate courses at the Academy, and at civilian colleges and universities are available, while the higher branches of administrative, tactical, and strategical knowledge, as we have noted, are cared for by the junior and senior courses at the War College.

From personal knowledge of other navies, and of the educational systems which they maintain, I am positive that no other Navy gives greater attention to the provision of adequate and advanced facilities for the professional training of its officers than our own. This means not only well-staffed schools, in and out of the service, but highly-specialized practical work in the fleet, which, after all, is the greatest of schools. Under the conditions discussed, there should be no room for doubt that our naval officers, as a whole, are highly efficient. Hence, no doubt should exist concerning the efficiency of the officers in the fleet, from its Commander-in-Chief down, for the ships are officered, in most instances, in the key positions, by those who designed them, equipped them, placed them in commission, and put them through their paces during the World War.

CONCLUSION

Happily for the Navy and the maritime interests of the country, the romance of the sea has not ceased to stir the imagination of the American boy. Nor has the replacement of ships with billowy sails by the gaunt and speedy steel craft of the modern, electrified, and power-driven Navy dulled his enthusiasm for a taste of life on the ocean wave. The alien sailor has been forced ashore and we now have an all-American Navy, ships, guns, and gunners.

The mechanically-minded youth of the land find a pleasurable outlet for their investigative eagerness on our warships, for the surface and sub-surface craft are so like floating machine-shops, power plants, and sea-going scientific laboratories, and our naval airships and seaplanes are so completely mechanical, that these youths are self-confidently and happily at home in the fleet.

Because of this super-mechanical character of naval craft, and the necessity of skill and experience as concomitants of safety and efficiency, in their management and operation, careful selection—moral, mental, physical, scholastic, and vocational—in recruiting the enlisted force has become a fixed policy, while training has reached a stage which makes the Navy an aggrandized trade and technical school.

Something favorable can certainly be acknowledged for a system that can recruit and train twenty-four per cent of its entire enrollment yearly. This is a heavy tax on the service, and hits efficiency a body blow, but it is the biggest fly in the ointment and may be quickly swatted out of existence by a law increasing the terms of enlistment, particularly the first term. Yet, despite the handicaps of short-term enlistment, it is noted that, for the fiscal year 1926, desertions dropped to 692, whereas, in 1924, they were 3,161, and that for 1926 seventy-six per cent of the expiring enlistments were either extended or the men affected reenlisted. This record, in itself, is a mark of high efficiency.

But every enlisted man must be educated, trained, and indoctrinated with the spirit

and traditions of the Navy; such procedure is not reserved for officers only. And when we remember that to meet the requirements aboard ship there have been established 137 different ratings among the enlisted personnel, each rating representing a distinct class of different kinds and degrees of training, it is not surprising that twenty-six trade schools with courses varying in length from four to thirty-eight weeks have been established, that these schools, with 260 petty officers as instructors, give seventy-four courses, and that these courses, with text books, are also available to all enlisted men.

The work of education for enlisted men is complete and includes both theoretical and practical instruction, covering every subject in detail for each of the 137 ratings, and other courses for the general academic education of the individual men, purely cultural, embracing such subjects as algebra, trigonometry, calculus, chemistry, and languages, and all this instruction is carried out under the supervision of the officers, even to the correction of papers and the tutoring of special students. During 1926, it is reported, 57,632 courses were issued to a total enlisted force of 62,261. Add to this academic work the inculcation of self-reliance, the spirit of fair-play, and self-control under stress and hazard, the products of discipline and tradition in an institution with a gallant and unsullied record of 145 years of service to the nation, and you have the ingredients of a successful recipe for efficiency, and the conditions that develop manhood. Here is no scheme for taking boys and young men from homes of culture and making idlers and ne'er-do-wells wholesale; here is no debauchery of manhood; here is no economic thievery, no sweeping robbery of industrial ranks by taking needed workers for an idler's life on men-o'-war in times of peace. On the contrary, except for properly proportioned hours of rest, recreation, and wholesome physical relaxation, the enlisted men of the Navy are actively employing their minds and bodies in the most extensive, most diversified, and most exacting technical school in the whole wide world.

While it is a fact that a large number of the technical requirements of the Navy are concerned with the identical equipment and apparatus which the service itself developed and then passed on to the country's industries; its greatest contribution to the nation's welfare in peace-time is this constant flow of vocationally trained and disciplined young men, from 15,000 to 25,000 each year, who leave the Navy and enter industrial establishments, business enterprises, and the technical professions ashore. This service to the country, if the Navy performed no other, makes the financial outlay upon its maintenance appear less like a burden and more like usury and putting money on a dead sure thing than may be observed in any other Federal activity.

Is it not apparent, then, that this extraordinary system of education, the careful selection of the recruits themselves, together with the weeding-out process on the basis of intelligence, application, and physical condition, which is constantly going on, practically guarantees the efficiency of the enlisted personnel, man by man? And where, as we have seen, the zeal and enthusiasm of the men is matched by that of the officers who instruct and care for them, and who work with them, the whole service exhibits a type of teamwork efficiency that merits the whole-hearted praise and constant support of the country at large.

It is my belief that I have given herein such a body of proof that there should be no doubts concerning the truth of the statement that the efficiency of the personnel, officers and men, is on a high plane, and that they are getting the utmost service possible from the ships they man. Personally, I believe that the efficiency of the personnel was never so high as at this particular time. The results of gunnery exercises and engineering competitions, of fleet maneuvers and aircraft operations, of the tremendous amount of self-sustaining repair and upkeep work carried out afloat, and of the expeditions now in the Caribbean and China, if given in detail, would merely pile up evidence sustaining the contention.

In my estimation, the knowledge of this high status of personnel efficiency in the Navy Department, and on general service ashore and afloat, is undoubtedly a determining factor in the policy of the Congress, and the Government generally, to neglect the material situation and crowd upon the personnel the task of protecting the country and its widespread and incalculably vital interests with obsolescent and improperly equipped ships. Such treatment of devoted public servants is un-American, unfair, and, if continued, may be disastrous to the best interests of the country.

But what shall be said of those governmental officials, all along the line, who ignore and pigeon-hole the advice of our naval statesmen, as was done by those in control of the issues of the Washington Arms Limitation Conference; who seem to believe that the naval needs of the country do not extend beyond their own transient terms in federal office; who will not understand that naval strategy is not confined to the operation of a fleet or fleets in wartime sea campaigns, but that it "has indeed for its end to found, support, and increase, as well in peace as in war, the sea power of a country"; and whose political programs do not recognize that prosperity fostered by our mighty foreign trade is ephemeral unless that trade is carried on by our own shipping and the sea lanes and distant termini, as well as the home ports, of that trade are protected by a Navy "in condition and prepared at all times?"

Those too blind, too partisan, or too weak to grasp and utilize these great and fundamental truths, and shape their policies accordingly, cannot be trusted to equalize the burden of Fleet efficiency by providing "new and better material," the need of which was so plainly stated by Rear Admiral Bloch and made so clear to the House sub-committee by Secretary Wilbur.

Once truthfully informed of the conditions, and thus without excuse for indifference, public opinion, expressed by means of the ballot if denied access to the press, I am led to believe, must assume the responsibility of insisting upon a governmental policy of providing our efficient naval personnel with material, ships, guns, and apparatus, in all respects worthy of their skill, devotion, and loyalty. If public opinion fails in this matter, the policy will not be realized; for partisanship knows naught of justice, of true economy, or yet of our naval needs.

Identification *of* Stars

By Ensign H. R. Grummann, *U.S.N.R.*

Professor W. H. Roever has described in detail* the application to navigational problems of several graphical methods of solving spherical triangles by the methods of descriptive geometry. He may be quoted as of the opinion that the presentation of the subject of navigation to students (especially to those students whose mathematical preparation leaves something to be desired) gains considerably in concreteness by explaining some of these graphical methods side by side with the solutions by tables or by logarithmic computation which are actually employed in practice.

As is well known, the principal disadvantage of graphical solutions lies in their comparative inaccuracy. In the case, however, of identifying a star whose altitude and azimuth have been observed, only an approximate solution of the astronomical triangle is necessary. The data are: (1) true altitude, (2) true azimuth reckoned from the elevated pole and expressed as an angle between 0° and 180°, (3) the dead-reckoning latitude. The parts of the astronomical triangle to be found are the hour angle and the declination. The former, keeping in mind its algebraic sign, is subtracted from the local sidereal time to obtain the right ascension of the star.

If the right ascension of the star is determined to within four minutes of time and its declination to within a degree of arc, it may be easily identified. These limits of uncertainty or error will not ordinarily be exceeded by the method outlined below, when the construction is carried out on an ordinary letter-size sheet of paper.

The method, which of course, differs from the usual methods only in the manner of solving the astronomical triangle, is best elucidated by examples.

**American Mathematical Monthly*, Vol. XXV, November, 1918, pp. 415-428.

Example 1

P. M. Wed. 18 May, 1927, Lat. 38° 40′ N., Long. 90° 20′ W., observed (with engineer's transit) very bright object for Sumner Line. Corrected altitude, 28° 47′.4 True azimuth 281° 15′.

G.C.T. of Observation (19 May)..	1h	42m	19s
Sid. Time of 0h G.C.T. (19 May)	15	42	40
Table III			17
G.S.T.	17	25	16
Long. (west)	6	01	20
L.S.T.	11	24	
Hour angle by the construction (72°)	4	48	
R.A. of the object	6	36	

From the construction p = 64°; i.e., declination = 26°. The unknown "star" is therefore Venus.

Example 2

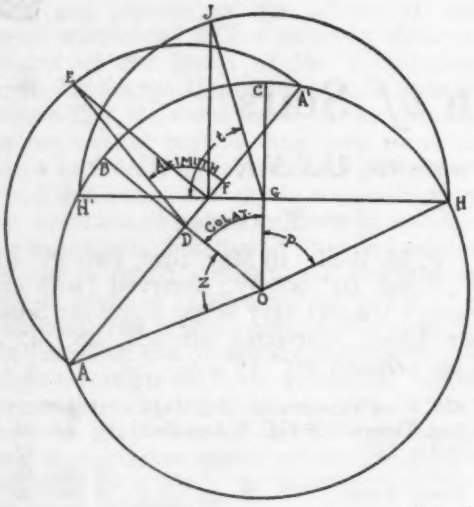
P. M. Wed. 18 May, 1927, Lat. 38° 40′ N., Long. 90° 20′ W., observed (with engineer's transit) bright star for Sumner Line. Corrected altitude 34° 26′.1 True azimuth 147° 20′.

G.C.T. of Observation (19 May)..	1h	51m	04s
Sid. Time of 0 G.C.T. (19 May)..	15	42	40
Table III			18
G.S.T.	17	34	02
Long. (west)	6	01	20
L.S.T.	11	33	
Hour angle by the construction (27°)	−1	48	
R.A. of the star	13	21	

From the construction, p = 100°, i.e., declination = —10°. The unknown star is therefore identified as Spica.

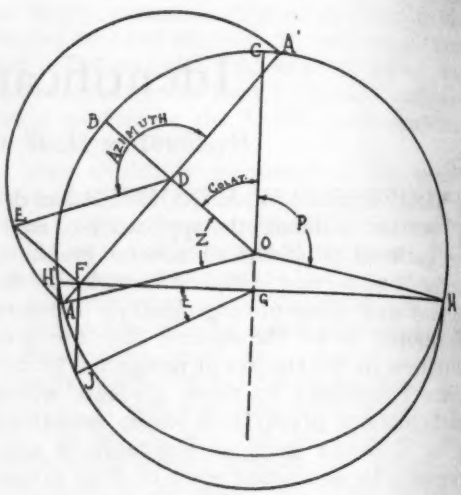
The two cases of the construction illustrated in the two examples given are the only ones that will arise in the star-identification problem. The great merit of the method is that it obviates the awkward interpolations incidental to the use of the star identification tables. For proof of the construction see Loria: *Vorlesungen über Darstellende Geomtrie*, Vol. II, p. 5.

CONSTRUCTION FOR EXAMPLE 1



a. Draw a circle of any convenient size with center at *O*.
b. Construct angle $AOB = Z$, the true Zenith Distance, in this example 61° 12′.6
c. Construct the adjacent angle $BOC =$ colatitude, in this example 51° 20′.
d. Drop a perpendicular *AA′* from *A* to *BO*, *D* being the point of intersection of this perpendicular with *BO*.
e. With *D* as center and *AA* as diameter, draw a semicircle exterior to the circle constructed in step *a*.
f. Construct the angle *A′DE* equal to the observed azimuth, in this example 78° 45′, *E* being a point on the semicircle constructed in step *e*.
g. From *E* drop a perpendicular to diameter *AA′*, *F* being the foot of this perpendicular.
h. From *F* drop a perpendicular to *CO*, meeting *CO* in *G*, and the circle constructed in step *a* in *H* and *H′*.
i. With *G* as center and *HH′* as diameter, draw a semicircle exterior to the circle constructed in step *a*.
j. From *F* erect a perpendicular to *HH′*, meeting the semicircle constructed in step *i* at the point *J*.
k. Measure the angles *H′GJ*; it is the hour angle, *t*.
l. Measure the angle *GOH*; it is the polar distance, *p*.

CONSTRUCTION FOR EXAMPLE 2



a. Draw a circle of any convenient size with center at *O*.
b. Construct angle $AOB = Z$, the true Zenith distance, in this example 55° 33′.9.
c. Construct the adjacent angle $BOC =$ colatitude, in this example 51° 20′.
d. Drop a perpendicular *AA′* from *A* to *BO*, *D* being the point of intersection of this perpendicular with *BO*.
e. With *D* as center and *AA′* as diameter, draw a semicircle exterior to the circle constructed in step *a*.
f. Construct the angle *A′DE* equal to the observed azimuth, in this example 147° 20′, *E* being a point on the semicircle constructed in step *e*.
g. From *E* drop a perpendicular to diameter *AA′*, *F* being the foot of this perpendicular.
h. From *F* drop a perpendicular to *CO* produced, meeting *CO* produced in *G*, and the circle constructed in step *a* in *H* and *H′*.
i. With *G* as center and *HH′* as diameter, draw a semicircle exterior to the circle constructed in step *a*.
j. From *F* erect a perpendicular to *HH′*, meeting the semicircle constructed in step *i* at the point *J*.
k. Measure the angle *H′GJ*; it is the hour angle, *t*.
l. Measure the supplement of the angle *GOH*; it is the polar-distance, *p*.

Meridian Altitude *and* Reduction Constants

A simple and uniform method for obtaining the latitude from bodies on, or near, the meridian

By LIEUTENANT J. E. GINGRICH, *U. S. Navy*

WHEN using the formula, L=Z+d, for meridian altitude and reduction sights, the different precepts are not easy to remember, so much so, that often a projection on the plane of the meridian is drawn to show how the various elements should be combined. In addition, an approximate altitude must be calculated in order to find the height of eye correction in preparing a constant.

The following method, using the haversine-cosine formula, gets away from the usual precepts; all sights being worked alike in the case of the upper transit of any body. There is no separate operation required to calculate an approximate altitude. The work is extremely short and simple. The haversine-cosine formula for the calculation of the line of position is as follows:

hav z=(hav t cos L cos d)+hav(L∼d). When the body is on the meridian, t, the angle of the body from the meridian, becomes zero, the body bears north or south and the value, (hav t cos L cos d), drops out leaving:

$$\text{hav } z = \text{hav } (L \sim d)$$
$$z = (L \sim d)$$

also, $z = 90 - Hc$

substituting, we get:

$$90 - Hc = (L \sim d)$$
$$Hc = 90 - (L \sim d)$$

In order then to prepare a constant for a meridian sight, it is only necessary to combine our nearest even degree of latitude and the body's declination (if like signs, subtract; if unlike, add), and subtract that amount from 90 degrees, to obtain Hc. Look up the height of eye correction using Hc and apply it and add the I.C. to Hc with signs reversed, to get Hmc (meridian constant.)

This Hmc is the calculated altitude of the body when on the meridian, with the height of eye correction and I.C. applied to it. The difference between the sextant altitude of the body on the meridian (H) and the meridian constant (Hmc) gives an altitude intercept (a) in minutes of latitude towards or away from the body according as Hs is greater or less than Hmc. This altitude intercept is measured from the nearest even degree of latitude which was assumed at the begining of the problem, and gives the latitude.

The following problem will illustrate the method:

(1) The Navigator of a ship predicts his D.R. position at local apparent noon on 2 March 1927 to be Lat. 38°–02′–45″ N, Long. 61°–02′–25″ W, I.C.+1′–00″, Ht. of eye 65 feet. He prepares a constant for the meridiam altitude of the sun. He takes a sextant altitude of the sun at LAN. 44°–23′–00″ and finds the latitude. Sun bearing south.

	h m s	
LAT of LAN	12–00–00	
Long West	4–04–09	
GAT of LAN	16–04–09	(2 Mar)
Eq T (sign reversed)	(+)12–24.0	
GCT of LAN	16–16–33.0	(2 Mar)
Dec. of sun	7°–24′.5	S
Latitude assumed	38 –00	N
L+d	45 –24.5	
	90	
Hc	44 –35.5	
Corr. for Ht. of eye & IC	(–) 8.2	
Hmc (meridian cns't)	44 –27.3	
Hs	44 –23.0	
(Sun bearing S) a=	4.3	Away
LAN latitude	38 –04.3	N#

When the body is near the meridian, the value, "hav t cos L cos d," is equal to $a\,t^2$ and Hc = 90 − (L∼d) − $a\,t^2$. To obtain a reduction constant, find $a\,t^2$, and subtract it from Hmc (meridian constant) to obtain Hrc (reduction constant). Apply to Hrc the sextant altitude Hs at the time of the reduction sight to obtain the altitude intercept. This altitude intercept gives the latitude at the time of sight. The following problem will illustrate the method: (2) During evening twilight on July 8 1927 the navigator of a ship in D. R. Lat. 11°–05′ N, Long. 53°–30′ W, observes the star Arcturus as follows: W 6h–45m–00s P.M., C-W 4h–01m–05s, chronometer error 1m–20s fast, I.C.+1′–00″, Ht. of eye 65 feet, and sextant altitude 81°–36′–30″. The star bears almost north and the navigator works the sight as a reduction to the meridian as follows:

	h m s	
W	6–45–00	
C-W	4–01–05	
C	10–46–05	
CC	(−) 1–20	
	10–44–45	
GCT	22–44–45	(8 July)
RAM ⊙	19–59–47.9	
Tab. III	3–44.2	
GST	17–48–17.1	
Long. W	3–34–00	
LST	14–14–17.1	
RA *	14–12–20.9	
HA *	0–01–56.2	

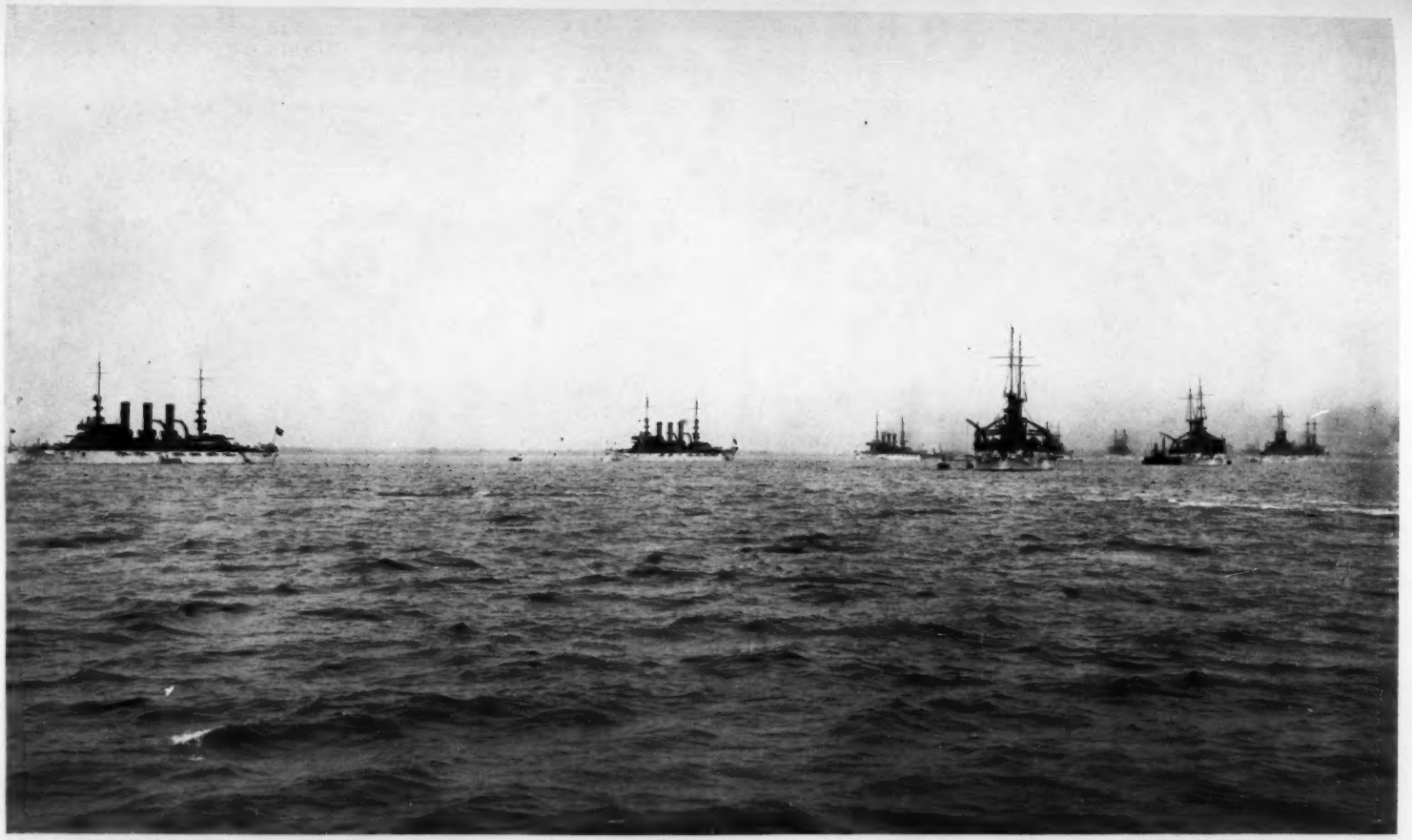
a = 12″.4 $a\,t^2$ = 0′.8

Dec. *	(+)	19°–33.′8 N
Latitude	(+)	11 –00 N
L∼d		8 –33.8
		90
Hc		81 –26.2
IC & Ht. Eye c.		(+) 7.0
Hmc		81 –33.2
$a\,t^2$		(−) 0.8
Hrc		81 –32.4
Hs		81 –36.5

(Star bearing N) a = 4.′1 Towards.
Latitude 11°–04′.1 N#

Aquino has said, "the only true interpretation of any sight is a line of position." This is just as true of meridian altitudes and reductions to the meridian as of other sights. When the latitude is obtained from a meridian altitude the line of position, being at right angles to the bearing of the body, runs east and west and defines our latitude. When we use the reduction to the meridian method, we obtain the latitude at which our line of position crosses the longitude we have used in working our reduction sight, and the line runs at right angles to the bearing of the body.

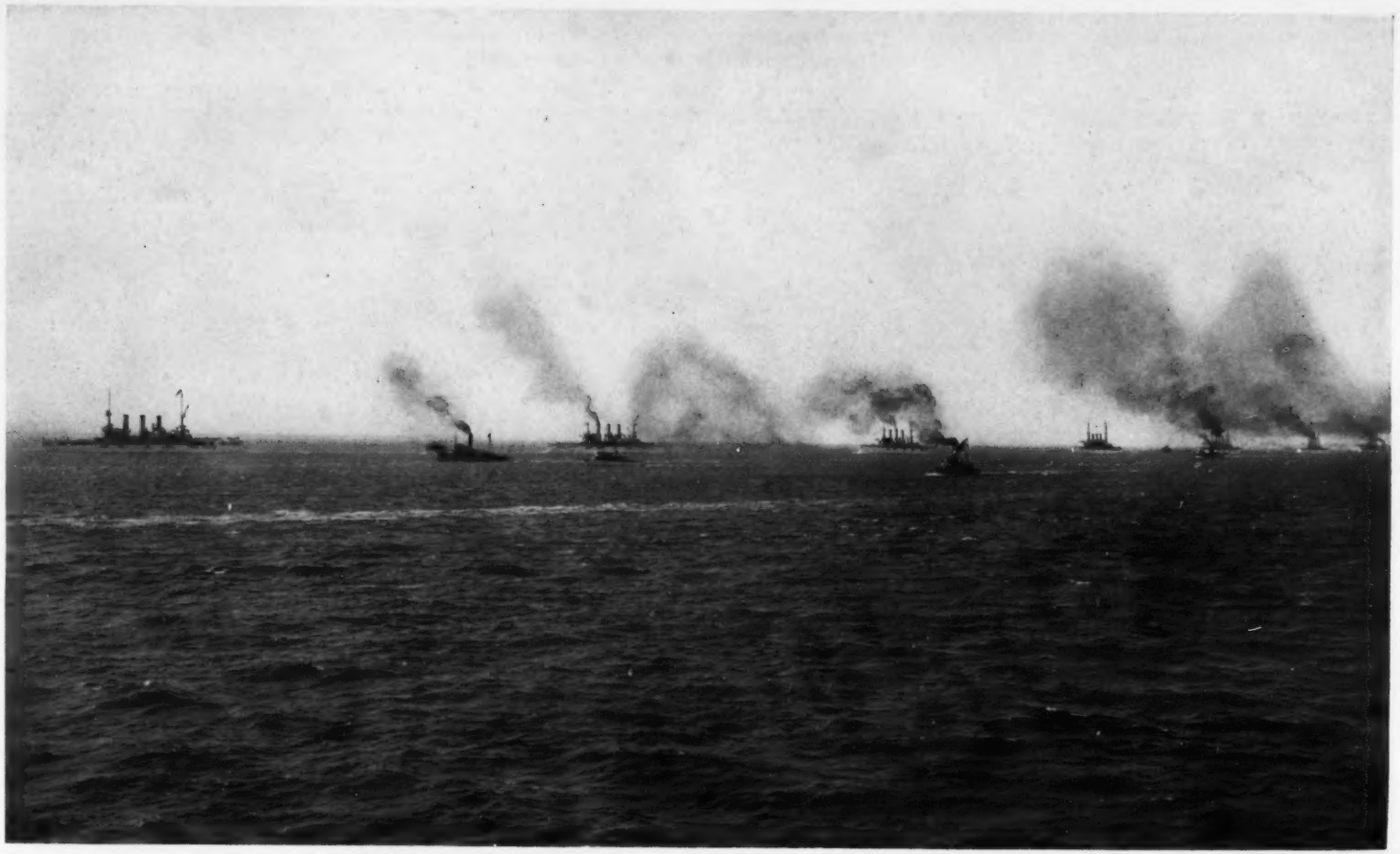
When using the reduction method with high altitudes it is desirable to find the bearing of the body and to lay off our line of position perpendicular to the bearing through our D.R. longitude and the latitude obtained from the reduction sight.



Copyright, 1907, William H. Rau, Philadelphia

A PORTION OF THE FLEET AT ANCHOR AT HAMPTON ROADS

A few days before it started on its memorable trip twenty years ago, under command of Rear Admiral "Fighting Bob" Evans, who said his fleet was ready for a "fight or a frolic." At San Francisco he turned over the command to Rear Admiral Charles S. Sperry who remained in command during the rest of the trip.



THE FLEET GETS UNDER WAY, HAMPTON ROADS, VIRGINIA, DECEMBER, 1907

Starting the first leg of the trip en route to Port of Spain, Trinidad. In its trip around South America it later visited Rio de Janeiro, Sandy Point, Straits of Magellan, Roadstead of Valparaiso, Callao and Magdalena Bay, Lower California. After a visit to all Pacific Coast ports, San Diego to Puget Sound, the fleet departed from San Francisco for Honolulu.

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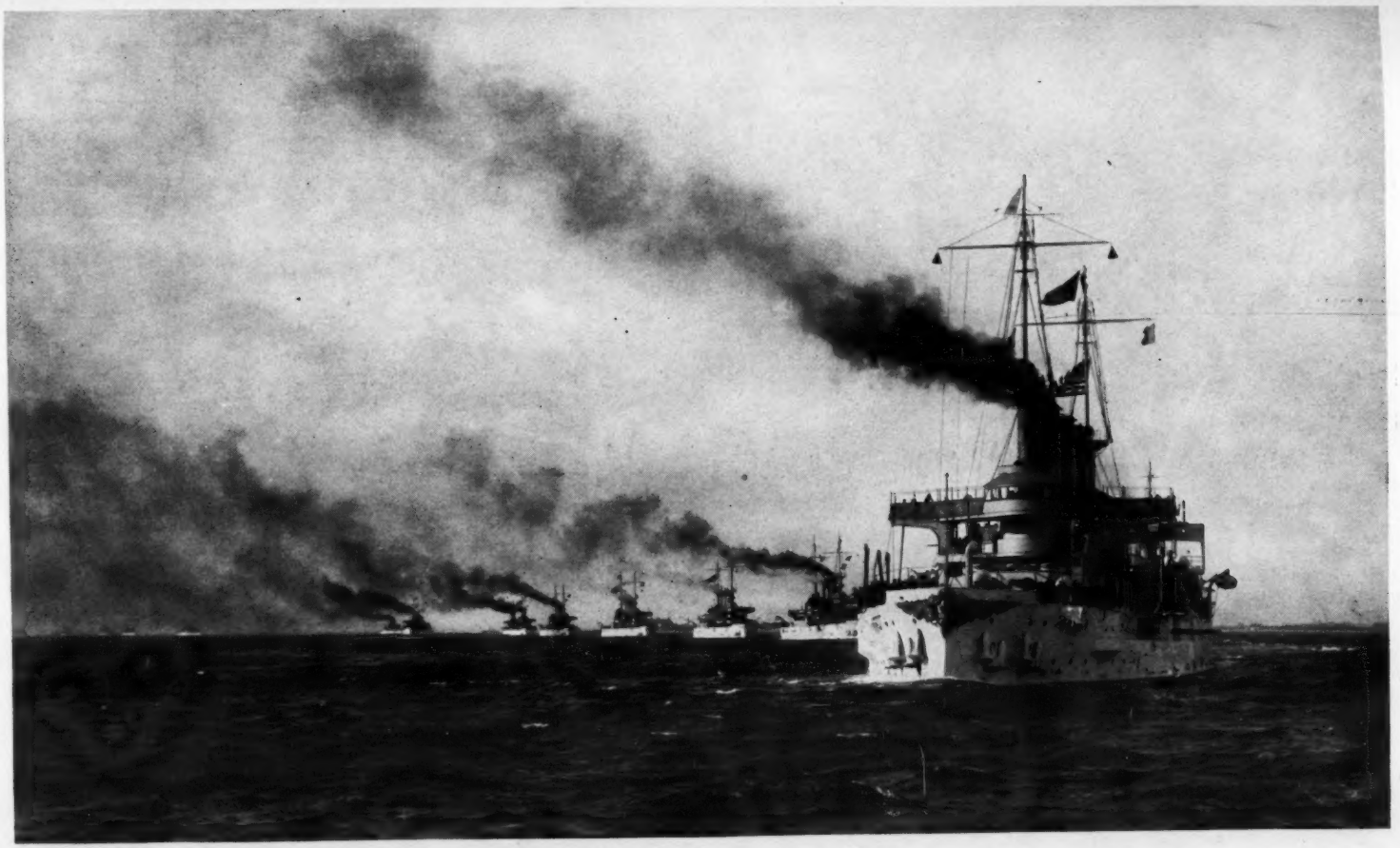

THE FIRST SQUADRON, BATTLESHIP FLEET

Shortly after getting under way at Hampton Roads, Flagship *Connecticut* leading, flying the flag of Rear Admiral Robley D. Evans. The fourth ship to the left is the *Georgia,* flagship of Rear Admiral William H. Emory, Commander Second Division.

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AT THE PRESIDENTIAL REVIEW

Nearing Cape Henry after passing in review before Theodore Roosevelt on board the *Mayflower*. The fleet was not to return to these waters for over fifteen months. Six destroyers made the trip around South America under the command of Commander A. W. Grant and Lieutenant Hutch I. Cone. The Commander-in-Chief's tender, the *Yorktown* under command of Lieutenant Walter R. Gherardi, accompanied the fleet around the world. The *Mayflower* is seen in the left background.

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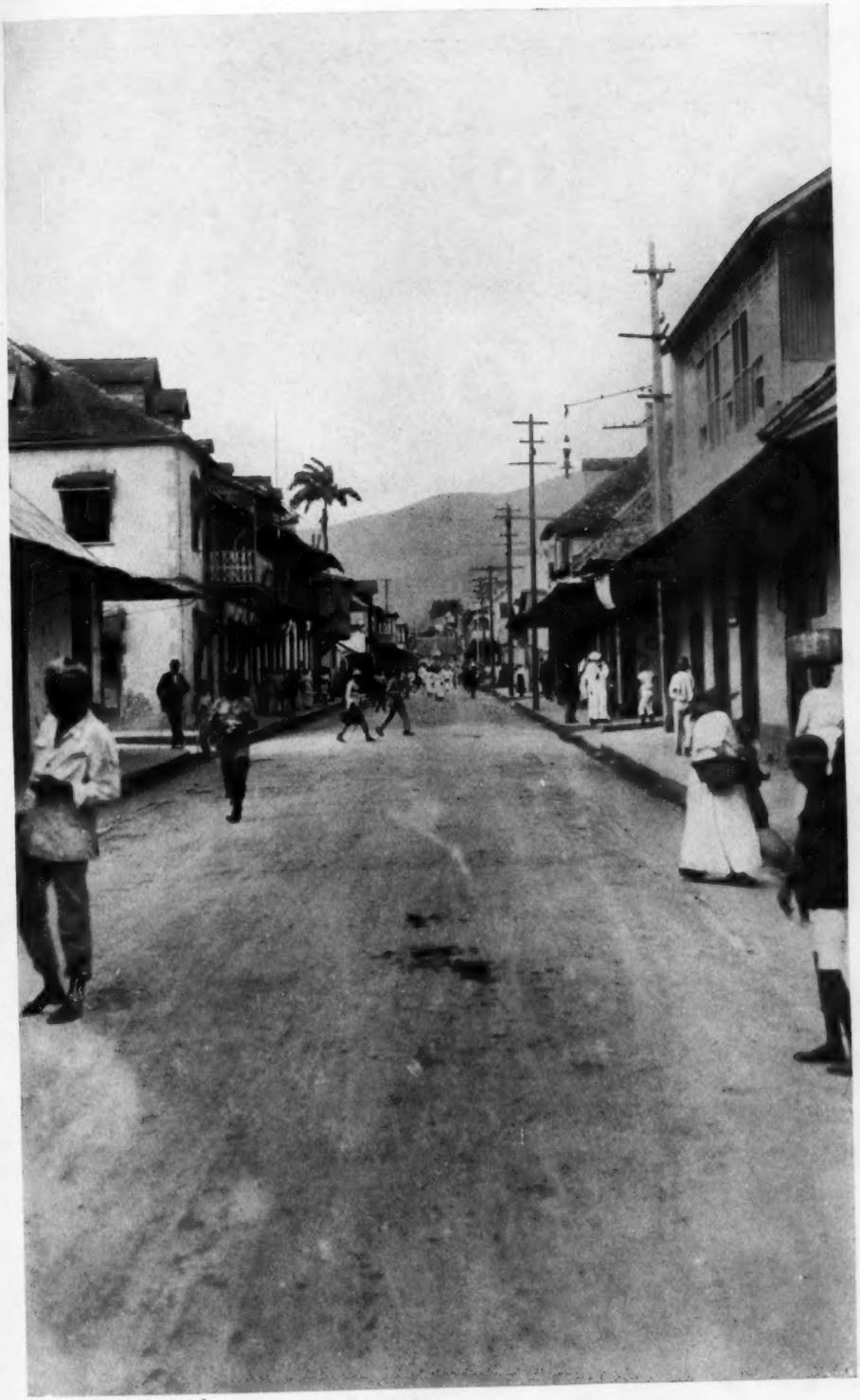
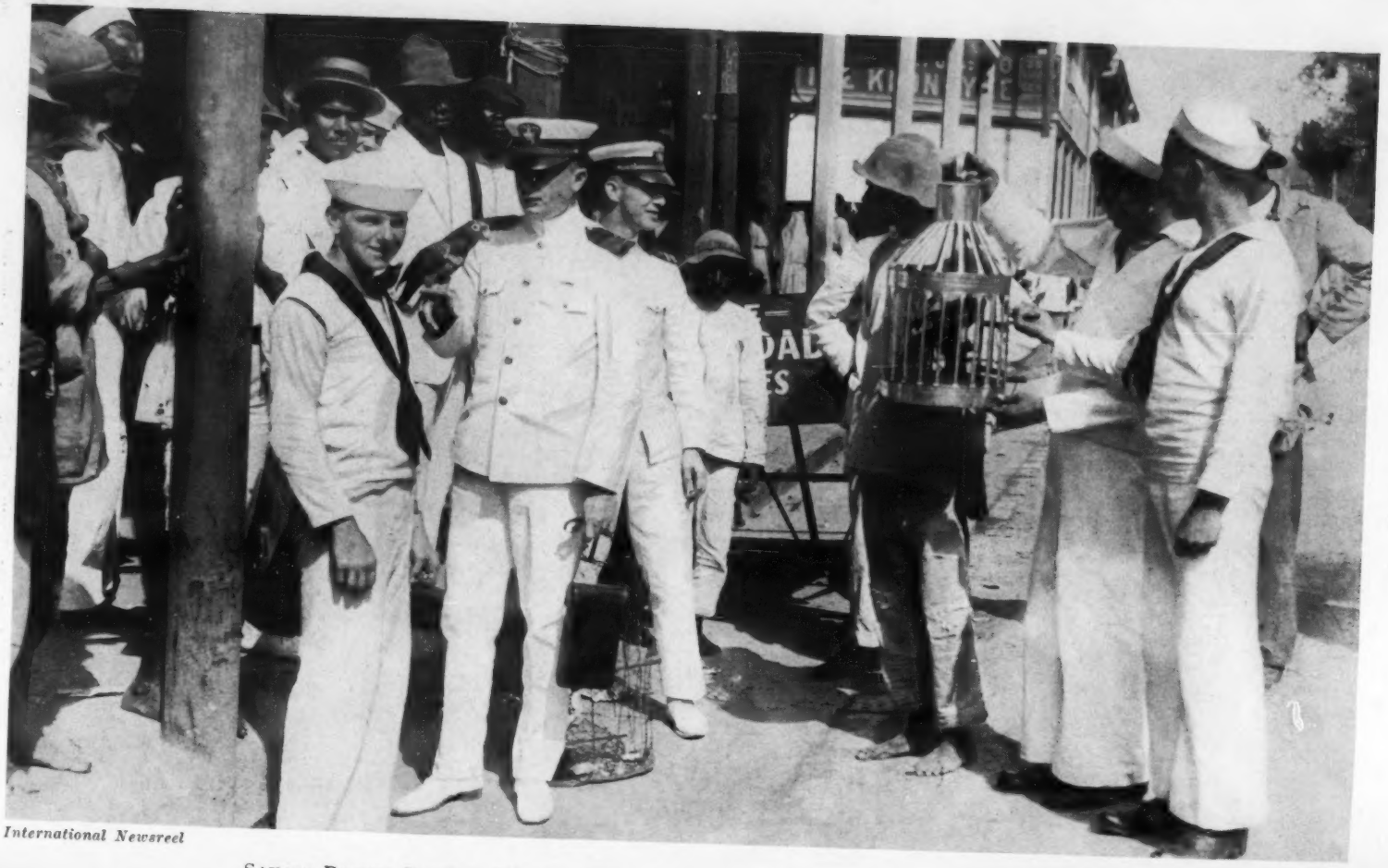


International Newsreel

GENERAL VIEW OF GEORGE STREET, TRINIDAD



International Newsreel

SAILORS BUYING PARROTS, TRINIDAD, WEST INDIES, THE FLEET'S FIRST STOP, DECEMBER 23, 1907

Underwood & Underwood, New York

WHITE HALL, TRINIDAD

The residence of an American in Trinidad, made entirely of white marble.

Underwood & Underwood, New York

TRINIDAD—THE QUEEN'S ROYAL COLLEGE FOR GIRLS

International Newsreel

CATHOLIC CATHEDRAL, TRINIDAD, PORT OF SPAIN

Underwood & Underwood, New York

THE QUEEN'S PARK HOTEL, TRINIDAD

The home of the famous "Green Swizzle," whose ingredients it is now illegal to publish in our country.

The home of the famous "Green Swizzle," whose ingredients it is now illegal to publish in our country.

Underwood and Underwood, New York

SINCE THE VISIT OF THE FLEET TO TRINIDAD TWENTY YEARS AGO MANY CHANGES HAVE TAKEN PLACE, ONE OF THEM BEING A MONUMENT ERECTED IN THE COMMON TO THE HERO DEAD OF THE WORLD WAR

Navy Recruiting Division, New York

DIAMOND HEAD, HAWAII, A WELCOME SIGHT TO ALL TRANS-PACIFIC VOYAGERS

Babel *in* China

Anecdote of a Linguistic Circus

By LIEUTENANT R. M. IHRIG, *U. S. Navy*

THE scenes of the great treaties of the modern world must present interesting studies in internationalism. Picture the scene at Versailles in 1918 when the representatives of all the Allied and Entente Powers met to discuss and arrange the fates of the losers and portion out the winnings to the victors. Consider the races and nations represented and the number of languages and modified tongues spoken between delegates in discussions outside the peace chamber. More recently, and closer to the Navy, picture the scenes attending the Naval Disarmament Conference at Washington in 1922. Here indeed was a chance for a naval linguist. Imagine one's self in an ante chamber during recess, around coffee cups, with mellow cigar smoke dulling racial animosities and suspicions, the English delegate talking Italian to the delegate from Rome; the latter turning to vociferate fluently with the Frenchman, while the Japanese takes up the Englishman's attention in purest English; the American explains the viewpoint and aims to the South American delegates, as onlookers, in Spanish. Up then comes the Chinese to join in, probably engaging the American and causing a regrouping and a quick shift of fluent tongues. Meanwhile the representatives of half a dozen other nations mingle in and further complicate the babel while endeavoring to understand or clarify the issues. Each national, in courteous deference to his partner for the moment, probably attempts to speak the other's language.

It is undoubtedly true that the naval officer, visiting as he does in the course of his career probably all the countries fronting on the sea, must, though strengthening his Americanism by such contact, become hopeful of the time when all the principal races will speak the same language or at least be able to speak each other's fluently. And how often does he discover, to his amused interest, the native heath of some of the hybrid words and idioms of his supposedly "pure English." The usual reaction on the average American officer is, however, one of keenest regret that he has failed to keep himself groomed in the two or three tongues that he studied in school.

The China station, bringing, as it does, all nations together with frequent opportunity for free mingling and conversation, is most apt to bring this lamentable deficiency home to the American officer. Every port has its half dozen or more principal nations ably represented at the club on any evening or at any social function. The fact that English, being firmly established as the commercial language, naturally becomes the general tongue on such occasions, does not detract from the nicety of being able to discuss with the national concerned, the latest reaction of the franc in French, the last attempt on Mussolini's life in Italian, or the superior merits, and the reasons therefor, of München beer in German. And when official or wardroom calls are made or received, the easy poise is hard to maintain while groping for the simple phrases and idioms of etiquette, or while listening with strained attention to a foreign officer while he speaks his piece in broken and perspiring English.

The gunboat *Asheville,* on a recent visit to Tientsin, was the scene of one of the most —shall I say international—conversations for a small group of American officers that has occurred since the Naval Conference. For the number of languages spoken per officer present and the nationalities represented, this informal parley set, I believe, a new highwater mark in genial internationalism.

The *Asheville,* unable to proceed to Tientsin because of low water in the Pei Ho, had been forced to lay over at Tangku, a small village about four miles up the river from the sea. The captain had proceeded to Tientsin by rail on official matters and all the

officers except the two with the day's duty were ashore. Enter the messenger, announcing two foreign officers in uniform. Greeted by the officer of the deck and conducted to the wardroom, they proved to be a French army captain and a Japanese army captain, each commanding the troops of their respective countries stationed in the vicinity. The Frenchman, though voluble, could not speak English, while the Japanese ran true to form and was retiring, if not actually taciturn, so that we could not tell if he could speak anything but his native tongue.

To forestall any flattering misunderstanding, I announced at once with one of my few phrases, that I could speak and understand French only very slightly. However, with true Parisian enthusiasm, the French captain, delighted at my attempt, took off on a long and speedy verbal flight far over my head. Perceiving my lack of comprehension, he raised his eyes, shoulders and hands despairingly and turned to the Japanese captain. Conceive our amused amazement when we two Americans realized that he, the Frenchman, was talking *German* to the Jap! Following a brief reply by the latter, they gave us a second surprise when the Jap turned, snapping to a smart attention, and bowing courteously, announced in good English that they had come to pay their respects to the Captain. This I thought was going to be easy after all. The oriental could act as interpreter between the whites, even though he had to use a third language to do it! But receiving my reply in English that the captain was in Tientsin, and this having been relayed in German to the Frenchman by the Jap, the latter lapsed into a dignified silence and the Frenchman took charge again with a fluent oration accompanied by earnest but graceful gyrations. His positive and serious manner convinced me that he was trying to deliver an important message. Catching, here and there, the words, *"le commandante Anglais—le genéral Japonais—le capitaine Français—le capitaine du vaisseau de guerre Americain—Tientsin conférence—demain—aprés midi—trés important,"* etc., I pieced together that there was to be a conference of the allied commanders at Tientsin on the following day and they wanted our captain to be present. Considering the nature of our mission, it sounded reasonable. To avoid a misunderstanding, I asked for the rostrum for a moment and unburdened myself of what I had gleaned, assuring him, that if he would put it in writing in French I would see that the captain received it properly translated upon his return. This at once caused a mild and good natured tantrum. I must have made a mistake somewhere.

Sympathizing with my embarrassing predicament, the officer of the deck finally entered the arena with the fifth startling international announcement. He could speak Spanish. Why not try that one on him? I announced this and received ejaculations of what I believed to be pleasure. The Frenchman turned a torrent of Castillian upon my brother officer and the latter listened earnestly, nodding his head in comprehension. Soon, however, his eyes assumed a far-away look and he turned to me with a hopeless expression.

"He started in Spain, but he finished in Italy," he said with a hurt look. I am sure he was right because I myself noted a shift in the vocal gearing. He told the French captain that he was afraid that his Spanish was not equal to the occasion, whereupon the latter turned to me again and started in in German. Quickly realizing that he had again mixed his races—myself for the Jap—and his tongues, he turned once more to the oriental interpreter and started speaking French. By this time he was really excited and I noted that the Japanese vernacular crept into his speech frequently. The ward room mess boys had appeared and were setting the table. Time pressed, his mission looked hopeless. Master of French, German, Spanish, Italian and some Japanese; yet he was unable to speak his piece intelligibly to the only audience that mattered! Truly an international complication!

A rejoinder from the Japanese officer diverted the Frenchman's French into German again, and a parley ensued between the two. Then the oriental assurred me once more that they had come to pay their respects to the Captain of the American warship. Good! That was fine, but how about this important conference in Tientsin tomorrow? Yes, both he and the French captain were going to Tientsin tomorrow to a conference, and they regretted, therefore, that they would be unable to call again to see our captain on that day. A light! Now I comprehended the scattered bits of the Frenchman's explanation. Well, then, couldn't they call on Monday? Followed another conference between France and Japan in German. The impatient Frenchman again turned to me and said

that he would be delighted to call on *"lundi."* Unfortunately, I could not recall the correct names for the days of the week, but believed firmly that *"lundi"* was Sunday—it certainly sounded like it. I explained that the Captain would not be back *"lundi"* but would return the following day (which day I could not name in French). Surprised and believing himself double-crossed by the Japanese interpreter, he broke into German again, and I heard the more familiar weekday words, *"Sontag"* and *"Montag."* While they were talking—and the conversation was rapidly becoming a semaphore message by the Frenchman, and even the Jap was punctuating his points by concise pokes of his forefinger—I grabbed a key idea from the Frenchman and decided to talk in two languages myself. Meanwhile our international background was forming still further. Cheng and Charlie Yong, the two Chinese mess boys, with cautious smiles, were discussing the show in Chinese while Lasica and Olaes, Filipino mess boys, were twittering away in insular Spanish. Finally I announced once more in French that the American captain would return on a German *"Sontag,"* very late, and would be pleased to receive the French and Japanese captains on a German *"Montag" "a dix heures."*

The perspiring Frenchman, by this time wrought up and tense, relaxed with a wide smile of joy and admiration. Immediately the two took up their caps and prepared to depart. As they stepped over the gangway, the Frenchman saluted with a friendly smile and said, with an emphatic and complimentary nod of his head.

"Vous parlez français et allemande trés bon, monsieur!"

Just like the Peace Conference, I thought. Three nations had had serious difficulties, great misunderstandings, but they had been adjusted. Six languages had been spoken—all the principal ones—two other races had stood by as observers and discussed the affair in their own tongues. The Frenchman, to get his message through, had had to speak German to a Jap, and had even essayed Italian and Spanish; and the Jap had relayed it to an American in English. The American reply had been in duo-tone, so to speak, French and German in the same sentence. Internationalism had finally won out.

"Form H" *for* Destroyers

By LIEUTENANT COMMANDER V. H. GODFREY, *U. S. Navy*

FIVE destroyers out of every six have a complaint "other ship-itis." A disease gradually increasing in severity from the second in column in a division to the unfortunate "tail-ender" and from the Asiatic squadron to the downtrodden Scouting Fleet destroyers.

This disease is incurable; as long as officers of the deck are human and fallible there will be jockeying back and forth to keep in position, ten turns faster to close up, then ten turns slower to keep from climbing over the fantail of the "next ahead" who incidentally is always wrong (or so the story goes). As long as we have no battleships in China waters or zero weather in San Diego, just so long will destroyers be operating under different conditions for which the *Rules for Engineering Performances* have no allowance.

"Form H" and the *Rules for Engineering Performances* are carefully worked out charts, designed to show at the end of each month the efficiency of the engineering plant of each destroyer. It does that but not the comparative efficiency. It would if all destroyers operated under the same conditions. But they do not. It is dubious if any rating scheme would absolutely equalize the varying operating conditions for all the boats, but bearing in mind a few outstanding features of the present competition, the following suggestions are offered for consideration.

Points admitted generally or facts of record:

1. A ship cruising independently at her chosen speed can make the best percentage of fuel used to fuel allowed. The most favorable operating conditions are a long, independent passage, fair moderate weather and freedom from distraction, when every auxiliary may be run at its most economical speed and no large reserve of power need be maintained.

2. A ship called on for special gunnery duties outside her own practice schedule can not hope to compete with undisturbed boats. The Battle Fleet and Scouting Fleet destroyers, firing special experimental torpedo practices and chasing torpedoes for the battleships, cruisers and airplanes, are at a great disadvantage as compared with the Asiatic and European divisions. There is nothing more uneconomical or less efficient than "standing-by" or making five knots, with four boilers lit off, for hours at a time, ready to jump instantly to twenty-five or thirty knots for a brief period only.

3. Because of the fact that most destroyer cruising in the battle or scouting fleets is done in division column formation, the division flagships reap the benefit of the "cruising alone" condition, while the ships following must, in increasing ratio be constantly juggling the engines and auxiliaries to maintain their position, and must also run with an excess of air to prevent smoking during these frequent changes of speed, all resulting in a loss in efficiency. The O.O.D. is torn between the Scylla of getting out of position and the Charybdis of incurring the Chief's wrath by too frequent "faster or slower" bells.

4. Again, the Battle and Scouting Fleet destroyers are handicapped by their series of maneuvers with the battleships. It is very necessary and vital that the fleets maneuver as a whole, but it plays hob with a destroyer's score to pass a day jumping from five knots to thirty on a minute's notice, or to spend a morning chasing madly off to lay a smoke screen, sooting up the tubes and shooting thousands of gallons of good fuel oil up the stack with no proportional allowance for benefit from it.

The above mentioned features all combine to pull down the average of the Scouting and Battle Fleet destroyers (the type of boat, too, has its drawbacks, but that is the builder's fault and is partially covered by the different allowances.)

But when, for the last five years, the Asiatic destroyers have, as a class, regardless

of type, stood head and shoulders above the rest of the boats, there is evidently some reason over and above the merits of the personnel of the Asiatic station.

Here are some suggestions designed to at least furnish a basis for argument, out of which may come radical improvements in the competition.

1. Continue the present standard allowances for boats cruising alone.

2. Allow one hundred per cent or what is actually burned for all gunnery duties outside of division or squadron standard scheduled activities. Own gunnery exercises, common to all destroyers, are a legitimate function of the engineering performance.

3. Allow a certain additional allowance depending on position in formation: say two per cent for No. two in column, three per cent for No. three, four per cent for No. four, and five per cent for Nos. five and six, and if division guide is keeping position on some other ship, one per cent for her.

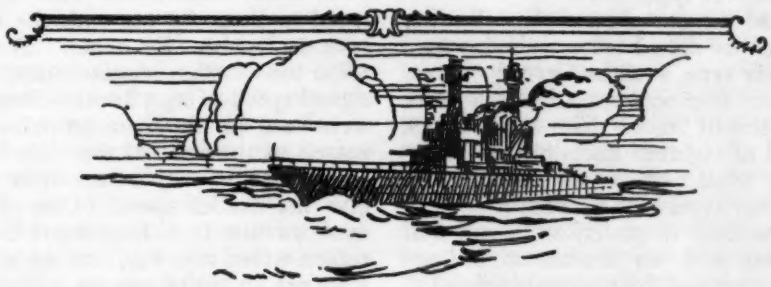
3. (a) Alternative proposition: rotate positions the flagship needs the experience share of duty as division guide and in other positions, the flagship needs the experience of keeping position in the middle of a column as well as any other place, and can handle the division fully as well from the center or the rear as from the head of the column. (This particularly for long cruises by divisions.)

4. Maneuvering: Make the allowance one hundred per cent or what is actually burned from "Commence the scheduled exercise" to "Cease present exercise."

It is not believed that the changes would result in any decrease in absolute efficiency: the Chief, even now, can do no more than bite his nails in anguish during maneuvers or torpedo chasing; he must furnish the steam and have a goodly reserve, too. And he does, in spite of his shrinking percentage.

The paper work and calculations might be slightly more involved, but the "Chief and his assistant," who now groan perfunctorily over "Form H" because they know that their operating conditions deprive them of any chance to stand among the leaders, would be only too glad to put a little more time and effort on "Form H" if they felt that they had an equal chance with the others.

The engineering competition is a fine thing—it has increased the general efficiency of the destroyers beyond all expectations—but why not now make it of such a character that the true comparative efficiency in engineering of the various boats be shown and a real competition, with equal chances to all, be started, which will raise even higher the standards of economy?



Submarine Sizes

By LIEUTENANT COMMANDER E. W. BURROUGH, *U. S. Navy*

UP TO the outbreak of the World War, all submarines were essentially of the same type. They were all small boats of well under 1,000 tons displacement, of the coast defense type, designed to fire torpedoes, and with a limited cruising radius. None of these earlier boats carried mines or guns. The submarine art was still in the experimental stage and reliability was being striven for rather than development of types. Habitability, quick diving, sea keeping qualities and cruising radius were all poor. Diesel engines, which at present are practically the only prime movers used, were at that period just being introduced to replace the gasoline engines and were necessarily crude and unreliable.

From the early days of the war, submarines sprang into a sudden prominence and their importance in naval warfare, which had been previously very problematic, was acknowledged to be vital. This naturally led to the intensive development of the submarine so that the close of the war showed a greater advance in this type of vessel than in any other. Not only was the essentially pure submarine type, such as the pre-war models, increased in size, cruising radius, reliability, speed and offensive power, but a great diversity of types arose.

The end of the war showed the following new types either completed or laid down:

1. Cruiser type, such as German *U-142*, with surface displacement of 2,158 tons, cruising radius of 20,000 miles at six knots, a full speed of eighteen knots and an armament of six tubes and two six-inch guns.

2. Monitor type, such as British *M-1*, of 1,600 tons surface displacement, a speed of fifteen knots and an armament of one twelve-inch gun and four torpedo tubes.

3. Small mine layers, such as German *UC-16* class of about 400 tons, low speed and a capacity of eighteen mines and four torpedoes.

4. Medium size mine layers, such as German *U-71* class of 755 tons, ten knots speed with a mine capacity of thirty-eight, and two torpedoes.

5. Medium size general purpose submarine, such as German *U-117* class carrying forty-two mines, twenty-four torpedoes and a six-inch gun. These boats were of 1,164 tons, had a speed of 14.7 knots and a cruising radius of 13,900 miles. This class was presumably built to lay mines and attack commerce off the Atlantic Coast of the United States. The *U-117* actually made such a cruise in the summer of 1918 and laid mines which it is believed sank the U.S.S. *San Diego*.

6. The British "R" class were designed with a submerged speed of fifteen knots, although they had a surface speed of only ten knots. Their tonnage was 420 and they were for use as submarine destroyers. Their large rudders and diving planes made them very handy.

7. Merchant types, as *Deutschland*, which were designed to bring needed materials as rubber, copper, etc., from the United States to Germany in spite of the Allied blockade. When we declared war on Germany, this class was converted to cruiser submarines (*U-151* class), but their low speed was a detriment.

8. Fleet submarines with high surface speed to keep the sea with the battle fleet, such as British "K" boats. They were of 1,850 tons surface displacement, with a designed speed of 23.5 knots. Steam turbines were used for the main propulsion of these vessels as the state of the Diesel engine art was not sufficiently advanced at the time to give the needed speed. One of this class made a cruise from England to Colombo and return after the war, but as a class they were not an entire success. At present only one, the *K-26*, is carried on the navy list.

9. Although not a distinct type, it is well to mention the German *U-135-138* class in this summary. Only two of these vessels had been completed at the time of the Armistice. They were considered by the Ger-

mans as the last word in medium size submarines and were the result of the best talent in Germany after nearly four years of war experience. This class was of 1,175 tons surface displacement, 17.7 knots speed, a cruising radius of 10,000 miles at eight knots, had four bow and two stern tubes and had one six-inch gun with a crew of but forty-six men.

Since the World War although there have been a great many submarines laid down or contemplated in almost all maritime countries, no new distinct types have arisen. Innovations such as provision for carrying a small sea plane have been made and improvements in operation and reliability have of course been introduced, but nothing really new has entered the field.

At the present time, there are submarines either built, building or proposed which vary in size from ninety-nine tons for Finland to 3,000 for France. It is obvious that with so great a diversity in sizes the word "submarine" alone is no longer adequate and it becomes necessary to consider the various sizes with their advantages and disadvantages.

In this article a small submarine will mean one of under 1,000 tons, a medium size from 1,000 to 1,800 tons, and a large submarine anything over 1,800 tons.

There is not much cause for argument as to the uses and limitations of the small submarines. They are essentially for coast defense or for offensive operations where the distances are small. This does not mean that a small boat cannot make long cruises for it has been done repeatedly, but they are essentially short cruise boats. The small German *UB* and *UC* boats were designed to operate on short mine laying or commerce destroying cruises out of Flanders. Their small size not only allowed rapid quantity production, but made them very useful in the shallow waters in which they operated.

At the present time there are over thirty submarines, most of them with a surface displacement of less than 400 tons, being built for the countries on the Baltic Sea, which is an ideal field for the small boat.

To draw a sharp distinction between a medium and a large size submarine is difficult, as the uses and limitations are more or less the same while the differences are not very marked except in size.

Although, as was stated above, the development in new types since the war has been practically nil, yet the increase in size of vessels has been very marked. The close of the war left the German *U-142*, 2,158 tons, as the world's largest submarine.

The following figures are taken from *Jane's Fighting Ships, 1926*, to show the trend in large submarines, since the war:

(a) U. S.—*V-1 to 3* of 2,164 tons surface displacement.

(b) British *X-1* of 2,525 tons surface displacement.

(c) U.S.—*V-4* of 2,890 tons surface displacement.

(d) France one of 3,000 tons surface displacement.

The latter has not yet been laid down, but it is understood that appropriations have been made to start work this year. The trend has been a gradual one toward larger vessels and although so far as is known there are no larger vessels than the French being contemplated at this time, plans have been made abroad for even larger sizes, notably one by Professor Flamm, for a 7,000-ton submarine.

The question naturally arises whether or not the French 3,000-ton submarine will be the world's largest, or will there be a steady increase in size as was the case with battleships prior to the disarmament conference.

So far as the actual building is concerned, there would probably be no great difficulty in constructing much larger vessels, but the question of "What's the use?" seems to be rather pertinent.

Let us consider briefly the advantages and disadvantages of a 2,500 ton or larger submarine compared with one of about 1,500 tons.

Large submarines should be more seaworthy and be able to maintain a higher sustained speed in heavy weather than the smaller boats, but this difference will not be very marked. Unless too much weight and space are used to attain a very high speed, the larger boat will have a greater oil capacity, with its attendant larger cruising radius. The larger boats should also be able to carry more torpedoes, mines and ammunition and mount more and heavier guns without affecting the stability, while the gun platform would probably be slightly steadier and drier.

Of the above points, which show advantages for the large type submarines, the most outstanding is increased cruising radius. Above a certain point, however, the deter-

mining factor in cruising radius for submarines is the habitability rather than the fuel capacity. One of the longest cruises on record is that of the German *U-155* (a 1,500 ton boat) in the summer of 1917, which lasted 105 days. This cruise was made under rather favorable conditions, however, as the weather was good during most of the time, while the nature of her mission, commerce destroying, allowed her to replenish her larder from captured vessels. A total of 9,600 surface miles and 620 submerged miles was covered on this cruise. (An interesting point brought out in this cruise was that during the whole period, including passage from Germany around Scotland to Azores and return, only one Allied man-of-war, an auxiliary cruiser, was sighted.)

The larger crews carried by large submarines renders their habitability no better than on the medium sized vessels. It may be said that the larger the boat, the less room there is available. Of course, the larger vessels have a little more deck to walk on, but there are more men to walk on it and deck walking on a war time submarine expedition is not usual anyway. It is extremely doubtful whether or not any submarine operating in rough weather areas and completely cut off from bases and supply ships could keep going for more than two months or cruise more than 12,000 miles. Even two months of this duty would wear the crews down excessively due to the cramped living quarters and the lack of sufficient cold storage and fresh water. The food would consist of sea stores almost exclusively. On a cruise of this length, if the submerged operations were extensive, the normal battery fresh water supply would be inadequate which would cause the evaporating plant to be used to make double distilled water with a consequent reduction in amount available for the personnel.

One of the advantages granted to the large type submarine is greater torpedo capacity, but their firing capacity is no greater because a medium size boat can have the same number and size tubes as the largest boat built and can fire them just as rapidly. The chances for a favorable attack against a capital ship do not come often at best and it is generally admitted that at least four torpedo hits are necessary to sink such a target. A large submarine would have no better chance than a medium size one in such an encounter, while the smaller the boat, the greater are the chances for an unseen approach.

In this connection, it should be noted that the German *U-117* had a capacity of twenty-four torpedoes and forty-two mines, on a surface tonnage of 1,164. Ten of the torpedoes were carried in tanks on the topside. The statement has often been made that this class lacked stability to such an extent that vessels were unsafe, but this is not borne out by the report of her commanding officer after her cruise to America in 1918. There were twenty torpedoes carried on this trip, and two of the tanks were utilized for food, so that most of the deck tanks were filled. The stability was reported as sufficient and seaworthiness good, in spite of several days with wind and sea force eight.

The added mine capacity for the large boats is an undoubted advantage, but again referring to *Jane*, it is seen that our *V-4*, the largest mine layer in the world, carries sixty mines, while *U-117* carried forty-two and had a cruising radius of 13,900 miles. Another point to consider is that the smaller the boat, the more readily can mines be laid in shallow water and the less chance there will be of detection from surface and air craft.

Before becoming too enthusiastic over the advantages of more and larger caliber guns and a large supply of ammunition, it might be well to consider what the gun is for. As previously stated, prior to the war, submarines were not armed with guns and their introduction arose due to the use of submarines as commerce destroyers. In the early days when merchant ships were unarmed a very small gun on the submarine was sufficient, but as soon as merchant vessels were armed, the submarines had to carry larger guns until the end of the war found the six-inch gun carried by several types. The submarine gun was also used as an offensive weapon against armed trawlers, mine sweepers and other small craft.

In the Washington Disarmament Conference, we practically eliminated commerce destruction by submarines, but even were it to be allowed, it is almost certain that future wars will see all commerce moving in convoys which would demand a submerged attack. In isolated cases of contact with a single auxiliary or armed transport, a four-inch or possibly a five-inch gun should be sufficient.

Unless the submarine is incapable of diving, it would be extremely foolhardy to engage in a gun duel with any surface man-of-war as a submarine hull is so vital that one shot can easily cause enough damage to prevent diving or to start an oil leak which, after the vessel dives, will leave an easily followed slick.

A smaller gun allows more ammunition to be carried in the same space, increases ease of supply and will give a greater rapidity of fire.

There are three main functions for a submarine, which are (1) to fire torpedoes submerged; (2) to lay mines submerged; (3) to act as a scout. A submarine should be a submarine and not a surface gunboat.

The large submarine will unquestionably be more expensive. For example, the British *X-1* (2,500 tons) cost over £1,000,000, while the *Oberon* (1,500 tons) commissioned in October, 1926, cost £590,513 or five *Oberons* cost the same as three *X's*. The building time will also be longer, the larger the submarine.

The foregoing discussion has centered on submarines operating independently, but their uses with the fleet must also be considered.

The exact rôle of submarines in a fleet action has never been definitely covered. While approaching the enemy waters they would presumably be in advance of the capital ships and be ready to dive in order either to let the enemy see them and thus cause him to avoid a certain area or else to get out of sight before enemy knows that submarines are about. In either case, once the submarine is down, it must remain unseen if it is to be of any value. No matter how well a large submarine may handle submerged, it will make more commotion going through the water than a smaller one and offer a larger depth bomb target, while a trim forward or aft will be more liable to expose the bow or the stern in a longer vessel. An attack on the enemy's capital ships under a zigzagging destroyer screen would have better chances of success with a smaller submarine. Another point to consider is that although the large boats can be so designed that their diving time is the same as that of medium or even small size ones, yet the larger the boat the more area there is exposed to ramming and gun fire during diving.

There does not appear to be sufficient value to the very large submarines over the medium size type to warrant further expansion in dimensions. It would seem that the ideal boat should be of about 1,500 tons surface displacement, eighteen knots speed with a cruising radius of 12,000 miles, four bow and two stern tubes and one four-inch or five-inch gun. It should be possible to carry at least sixteen torpedoes, and possibly more. A mine laying type could be constructed on the same tonnage.

It is interesting to note that:

1. **Great Britain** has apparently abandoned the large type, such as *X-1* and has now building and proposed only the *Oberon* type of 1,480 tons of which seventeen are to be laid down before 1930.

2. **France** is proposing to build a 3,000 ton submarine, but has built and building nine *Redoubtables* of 1,550 tons and nine *Requins* of 1,130 tons.

3. **Italy** has four *Balillas* of 1,360 tons laid down in 1925.

4. **Japan** has twelve of the *I-51* class of about 1,500 tons either built or building.

5. **The United States** has nothing between the *S* boats of less than 1,000 tons, and the *V* boats.

The Father *of the* American Navy

By Lieutenant Commander F. E. Cross, *U.S.N.R.*

STUDENTS frequently discover that historians sometimes arrive at the establishment of facts with great uncertainty of proof. Nevertheless, the opinions of narrators become, as years pass on, records of history, and as such are handed down to posterity. From time immemorial, political, factional, or religious influences have distorted the accuracies of important national events. Posterity, however, always eager for the truth, seeks full knowledge of the records of a historic past, and to it is justly entitled.

The question as to whom among the nation's early naval commanders or statesmen, if any, is due the honor of being called the father, or founder, of the American Navy, is a topic of interest to all of us, whether naval men or civilians. The opinions of naval historians on the subject, where expressed, are distinctly out of unison. We find that four, at least, of the Revolutionary patriots have had this honorary title conconferred upon them, three of the number being naval officers and one a civilian. Certainly, the title is one of very great distinction; and should it be a correct appellation to affix to the name of any deemed worthy of the honor, then custom would dictate that one person, or one body of persons, and not four individuals, should be so honored.

The most illustrious of our Revolutionary naval officers, Captain John Paul Jones, doubtless has been more popularly accorded the title than any other man. If we but recall Jones's brilliant services in behalf of the Naval Committee of the Continental Congress during the period of the Navy's inception in the autumn of 1775, then the reason for bestowal of great popular favor upon him is plainly disclosed. Jones's relation with the Naval Committee was that of an adviser, in which capacity he made his influence appreciably felt. History records that he took a leading part in the reconditioning of merchant ships for naval service and in the organization of the first American naval fleet which later, in January, 1776, put to sea under command of Commodore Hopkins. While engaged with these tasks Jones found the time, at the request of the Naval Committee, to submit two manuscripts for the enlightenment of that body; the one being on naval personnel, the other on naval material. These papers, as all naval officers know, were highly regarded for the mature thought and wise counsel that they contained, and even today are, in many respects, quite as applicable to the needs of the naval service as they were one hundred fifty years ago. Further, they definitely proved the author's long experience and wide knowledge in the profession of the sea, and thus served to establish for him a well merited prestige, which increased with his brilliant successes in the course of the Revolutionary years that followed.

Thus it was that John Paul Jones became known as the father, or founder, of the American Navy. And it is pertinent to add that the great honor was bestowed upon him, not so much for his remarkable sea exploits, although they were the most brilliant of the Revolutionary War, but rather because of his invaluable services to the Naval Committee of 1775, when that body was engaged in the administrative task of laying the foundations of the American Navy.

Shortly after General Washington took command of the Army outside of Boston in July, 1775, he ordered, with the consent of Congress, several small vessels to be armed and manned. These vessels were known as Washington's fleet and had orders to cruise between Cape Ann and Cape Cod for the purpose of intercepting or capturing enemy transports and store ships. By far the most successful among this small fleet was the *Lee*, a schooner of seventy-two tons, under command of Captain John Manley, a shipmaster of English birth. The *Lee* had effected several important captures and in January, 1776, her commander, who had been highly commended by Washington for

his distinguished services, was made commodore of the fleet and transferred to the schooner *Hancock*. Later, Manley was appointed one of the first commissioned captains of the Navy. He continued to serve throughout the Revolution with great distinction and, while not always successful, yet rounded out an enviable record which placed him in the first rank of early American naval commanders.

The historian, Willis J. Abbot, in his well known work, *The Naval History of the United States,* makes the following reference to Captain Manley:

> In October, 1775, Congress fitted out and ordered to sea, a number of small vessels. Of these the first to sail was the *Lee* under command of Captain John Manley, whose honorable name, won in the opening years of the Revolution, fairly entitled him to the station of the father of the American Navy.

In the center of Independence Square, Philadelphia, within a stone's throw of Independence Hall, stands a noble statue of Captain John Barry, one of the most distinguished of the Revolutionary naval commanders. Many are those who claim for Barry the title of father of the American Navy; and one sees inscribed upon a bronze tablet at the base of the statue the following:

Commodore
John Barry, U.S.N.
Father of the Navy
of the
United States
Born in Wexford, Ireland
1745
Died in Philadelphia
1803
Presented to the
City of Philadelphia
by the
Friendly Sons of St. Patrick

The services of Barry, like those of Manley, were highly meritorious and praiseworthy to the end of his naval career.

History discloses to us that in the early days of the Revolution there was serious opposition to a Federal Navy. This opposition existed among the citizens, as well as among members of the Continental Congress. Yet the necessity for a united naval policy had its staunch supporters and, of these, Mr. John Adams took the lead. He debated long and convincingly in the Congress, not only for a Navy as security against the depredations that were being committed along the undefended coast, but also for the purpose of harassing the enemy on the high seas and in his home waters. Adams later became chairman of the Naval Committee from October, 1775, to January, 1776, and while so serving was largely instrumental in the founding and early administration of the Revolutionary Navy.

In an old publication, entitled *American Naval Battles,* by Horace Kimball, the author expresses his views in the preface of his work, as follows:

> To no individual is the nation more indebted than to Mr. John Adams; and posterity will hail him as the father of the American Navy.

Thus do we find that a most honored title is bequeathed by historians and others to at least four of the Revolutionary patriots. Most naval historians, however, wisely disregard the choice of a favorite for this distinction, for the very good reason, doubtless, that no person, whatever his fame, can truly merit the honor.

The founding of the Navy, like the founding of the Army, was of indubitable need to the Revolutionary patriots in their struggle for liberty. The one supplemented the other and each was used as an indispensable means to the attainment of the peoples' rights for self government.

Dr. C. O. Paullin, whose thorough and extensive researches in connection with the early history of the Navy have resulted in several notable publications under his able authorship, will bear quoting. In *The Navy of the American Revolution,* he states:

> It scarcely needs to be said that the Naval Committee's claim to distinction rests not upon its military achievements, but upon its work of a civil character, whereby it laid the foundations of the Revolutionary Navy. It acquired the first American fleet, selected its officers and fitted it for sea. It drafted the first penal code of the Navy and prepared not a little fundamental naval legislation.

The honorary title then, of father, or founder, of the American Navy, because it is not truly merited, at least, by any single person, becomes incongruous. Also it is an appellation which is extremely misleading, particularly to those of our citizens, and others, who may be unacquainted with the essential facts pertaining to American naval history. Therefore the title might well be revoked, and without loss of prestige to any of the great patriots to whose names it injudiciously has been affixed.

Law *in* Future War

By CAPTAIN ELBRIDGE COLBY, *U. S. Army*

TEN years after the World War, it is being said in many quarters that the nations of the earth are drifting toward another conflict. And the question immediately arises as to what kind of a war it will be. Shall we have an annihilating conflict? Shall we repeat the very worst practices of the last struggle? Is international law in the discard?

There are many reasons for believing that the next war, if there be one, will be a dreadful drama of horrors. In major struggles, with nations fighting for very existence, with popular governments supported by their citizenry, the time-honored distinction between peaceful non-combatant and armed combatant tends to disappear with the population "all in it" as they were in 1918, with economic stress and personal conscription. In industrial nations, every scientific and mechanical element is turned toward a war purpose. Colonel Fuller of the British Army seems to predict a war which will strike, not so much at armies in the field as at the directing government and the supporting populace at home.

Mr. James M. Beck has said:

> During the World War, nearly all the international laws . . . . were immediately swept aside in the struggle for existence; and civilized man, with his liquid fire and poison gas and his deliberate attacks upon undefended cities and their women and children, waged war with the unrelenting ferocity of primitive times.

An able barrister, Dr. Lawrence B. Evans, has declared:

> Much of the old law as to the relations between belligerent states is based upon the assumption that war is in essence a conflict between their fighting forces and not between their populations. Whether or not that condition ever in fact existed, it no longer obtains. Prior to the Great War, all the resources of Germany—military, industrial, and financial—had been organized for war. Under such an organization a peasant woman cultivating a farm was as much a part of the military machine as was a soldier in the ranks, and from a military standpoint there was no reason for placing the two in different categories. In the course of the Great War, the adversaries of Germany were forced to adopt a similar type of organization, and in any future war of magnitude, the resources of the belligerents will be mobilized on the same principle but with even greater care and effectiveness. One of the first of the rules of international law which will be modified or even abolished is that which distinguishes between combatants and non-combatants.

A law exists against murder, as it does against auto speeding and intoxicating liquor. Is it fair to say that homicides, traffic violations, and drunkenness in separate cases or even in considerable numbers absolutely abolish the laws governing those topics? Is it fair to say that occasional transgressions demonstrate the utter futility of the penal statute?

Early in the nineteenth century, Napoleon issued his notorious Berlin and Milan decrees to effect a paper blockade of the British Isles. In retaliation, the English issued certain stringent Orders in Council, which an English Court declared would have been absolutely illegal save for their retaliatory character. Twenty years later these decrees and orders were regarded "only as the passing expedients of a contest desperately waged." In 1938, will not the allied bombing of Rhineland cities be likewise regarded? Will not the "economic pressure" put on Germany by Winston Churchill and the unrestricted submarine campaign put on shipping by von Tirpitz, also be regarded in the same light?

If a man's property be destroyed in the course of military operations, he may hold up his hands in horror and declare he has been ruined. But later he goes to court and recovers damages. The law books are replete with instances of such procedure successfully consummated. In the very last years of the eighteenth century, the French were harassing our commerce. Several times we were on the verge of conflict with Napoleon. Our Supreme Court has even defined the conditions of that time as amounting to a "limited" war. But it is a fact that the

French Government arranged by treaty to pay off the claims of American seamen, and the strength of the law was thus later asserted.

"International law has gone by the board!" declares the amateur, but at present there is sitting in Washington a joint German-American Claims Commission to investigate and settle claims of American citizens for damages resulting from Teutonic transgressions of the laws of war. Great Britain has paid American packers for cargo seized from ships which British officials deemed might have been destined by devious routes for Germanic consumption. Law is a slow process. Military urgency is great and immediate. The necessity of the moment calls for action. If a house be destroyed incident to military operations, the owner may recover at law under certain circumstances. The owners of a bridge near the city of Washington received redress through Congressional legislation. A traveling trader in Mexico whose wagons and animals were seized by a portion of Doniphan's Expedition in the Mexican War, went to court and secured damages. Naval officer after naval officer has been held accountable in courts of law for acts committed under orders and when he had to pay the private citizen, the government has indemnified him by special appropriations.

The most startling example, perhaps, of the insistence of a nation upon its good name and its ready responsibility was in the case of the transgressions of a certain German submarine. The Treaty of Versailles specified that offenders against the laws of war might be tried by the Allies. Diplomatic bickerings, however, brought the trials to Leipzig before a German court. One *U*-boat had fired shells at life-boats from a ship sunk at sea. Its commander could not be found; he had "disappeared" to South America. But the German Government was anxious to punish a crime which "threw a dark shadow on the German fleet." The German Government of its own initiative sought out two of the principal subordinates of the missing commander, and brought them to trial. They argued that they had been compelled to do as they did, by virtue of direct orders, and by pistol pointing threats. Nevertheless, the German court found them both guilty and punished them both.

In any war there are things done in the excitement of the moment that are violations of acknowledged rules of warfare. They are things done under the urgent pressure of military necessity for which a government knows it will have to pay. Pressed to the utmost, a nation will adopt desperate measures. But the nations of the world are cognizant of the fact that flagrant flouting of established rules of international law will bring all the nations of the earth about their ears. If methods are clearly forbidden by international agreements and disapproved by "the public opinion of the civilized world," the offender will find his transgressions accepted "as a challenge to all mankind." His foes will be augmented by increasing numbers of allies, and he will go down to as sure an ignominious a defeat as Germany did, and be compelled to pay in reparations to the last coin in the national treasury.

It is so easy at the moment to assume a pessimistic attitude—to forget the accounting that will come later. It is easy to forget that violations of the rights of neutrals to seaborne commerce brought the United States into the War of 1812 and into the World War. It is easy to overlook the fact that it was Spanish cruelties in Cuba that excited our populace and urged our country into the war of 1898, and eventually lost Cuba and Porto Rico and the Philippines to Spain. The laws will be violated, indeed, as all laws are liable to be violated—else there would have been no need of laws at all. But the violations bring punishment, in one sort or another.

It is difficult, in the heat and bitterness of a conflict, to distinguish what is right from what is wrong. The British Orders in Council were unjustifiable under ordinary international law; but they were perfectly justifiable in their character as retaliations for the blatant Berlin and Milan decrees of the pompous Napoleon. During the World War, certain Englishmen objected to airplane bombing operations being carried out by their own forces over Freiburg, and it took a level international lawyer, Mr. Holland, to point out that though illegal by ordinary standards, they were perfectly appropriate as retaliatory measures for specific misdeeds.

Time and perspective are necessary. The bright light of the present conflagration blinds the eye to the true aspect of things. As the years flow by and things are seen in their proper order, judgments become less

impassioned and more sound. During the American Revolution, the debts owed to Tories were confiscated in some of the colonies which later became the United States. After the return of peace and the establishment of the Federal government, attempts were made to adjust the matter equitably. Some states refused to grant redress. The brilliant lawyer who was later to become Chief Justice John Marshall of the Supreme Court actually argued a case for the state of Virginia and attempted to show that by the law of nations confiscation was justifiable. Nearly twenty years later he handed down a decision from the Supreme bench in which he stated that although strictly speaking confiscation was justifiable, no nation could practice confiscation "without obloquy." And it is a matter of history that the newly established Federal government assumed the duty the separate states refused to assume, and arranged to pay the British subjects monetary damages for their losses.

For the war of the future, then, we need not necessarily expect any terrorizing nation-wide assaults upon citizens. In most respects, international law remains, as regards warfare, much the same as it did before the last big conflict. Even though the new rules drawn up in 1923 to control the operations of aircraft and to direct aërial bombing primarily at military objectives, are draft rules only and have not attained the dignity of a treaty status, they will have their effect upon operations, and will serve as reminders of what is considered fair fighting. And woe unto that nation that recklessly disregards civilized opinion in its methods of conflict. The nations of the world will rally against her. The World War did not smash the Hague Conventions or the Geneva Conventions, nor relieve governments of their obligations to fight within the rules, some practices during those years to the contrary notwithstanding.

The law may have been violated, but the law still persists. Occasional transgression does not constitute abolition. The law remains and tends to govern, even though not entirely successfully, through the feverish intensity of the bitterest campaign. The law is firm. Weapons alter. Circumstances change. Human nature and human psychology remain fixed. The law is the same.

The test of the status of the rules of war is a test of ideas, not a test of facts. It is a test of feelings, not a test of events. It is a basic doctrine, not a few separate instances. As Mr. Spaight has remarked: "The heart and conscience of the combatants are the guarantees of fair fighting" in any particular struggle. The measured laws of the world have been generally established, widely accepted, and will last as long as the world as a whole is a fit place in which to live.

British "Sloop of War" Diamond Rock

By CAPTAIN E. C. KALBFUS, *U. S. Navy*

AUTHOR'S NOTE: The British occupation of *Diamond Rock,* its commissioning as a man-of-war, the annoying operations conducted from it, and its final capture by the French, constitute such an unusual page of naval history that the story will bear repetition. The following is largely taken from a rare original edition of the *Naval History of Great Britain,* by William James, which bears the date of 1823 on its title page.[1]

THE Diamond Rock is situated within three-quarters of a mile of the southwest end of the island of Martinique, in latitude of 14-24 north, longitude 61-06 west. Its height, as measured by a quadrant, is 600 feet, and its circumference rather less than a mile. The south side of the rock is inaccessible, it being a flat steep, like a wall, sloping a little towards the top. The east side of it is also inaccessible, with an overhanging cave about 300 feet high; there are other caves of great magnitude on the southwest side, but here, also, the rock is impregnable. The west side, where breakers run into the sea, affords the only landing, and that not at all times practicable on account of the surf; and, even when a person is landed, he has to creep through crannies and over dangerous steeps till he reaches the northwest side, where the eye is suddenly relieved by a sloping grove of fig trees. It was in the latter end of the year 1803 that Commodore Samuel Hood, of the *Centaur,* 74, then cruising in Fort-Royal Bay, sent a party to land on this barren rock. The knowledge that vessels bound to Fort-Royal usually pass close to it suggested the idea of making it a sort of depot, or stationary cruiser, whence boats could be detached to harass the enemy's trade.

In the course of January and February, 1804, with incredible difficulty, five guns, three long 24's and two long 18-pounders, from the *Centaur,* were mounted on different parts of the rock; one 24-pounder, on a circular carriage, commanded the landing place, and nearly across the bay; another was mounted on the northeast side; a third about midway up the rock; and on the summit, which commands an immense distance, were mounted the two 18-pounders. On or about the first of March, Lieutenant James Wilkes Maurice, first of the *Centaur,* with the rank of commander, and a crew of 120 officers, seamen, and marines, supplied with four months' provisions and water, took possession of the British "sloop-of-war" *Diamond Rock.* A writer who was on the spot says:

> Were you to see how, along a dire, and, I had almost said, a perpendicular acclivity, the sailors are hanging in clusters, hauling up a four-and-twenty pounder by hawsers, you would wonder; they appear like mice hauling a little sausage; scarcely can we hear the governor on the top directing them with his trumpet, the *Centaur* lying close under it, like a cocoa-shell to which the hawsers are fixed.

Diamond Rock was a thorn in the side of the French from the outset. The Governor of Martinique was unable to capture or reduce it, and for two years the little garrison lived in pure enjoyment a Robinson Crusoe life amongst the caves, incessantly raiding and cutting out. When Admiral Missiessy, with his Rochefort force, arrived at Martinique in March, 1805, the Governor in vain entreated him to devote a portion of his force to Diamond Rock before he left. In spite of his vehement protests Missiessy refused, and forthwith sailed away in accordance with his program. Napoleon, disgusted with Missiessy for the lack of energy and initiative he had displayed throughout his West Indian cruise, unbosomed himself to Decres on the particular subject of Diamond Rock. "I choked with indignation," he said, "when I read he had not taken the Diamond." And, again, "That Rock will be an eternal monument of shame to this expedition."

[1] Owned by Commodore James Parker, U. S. Navy, (Retired) who kindly permitted its use by the author.

Villeneuve arrived at Fort-Royal May 14, 1805. Whether or not Napoleon had ordered Villeneuve to take the Rock, history does not reveal to us. He had, however, ordered that officer to wait a month in the Antilles, in order to give Ganteaume an opportunity of joining, and his orders, among other things, included an injunction to do all possible injury to the enemy. The want of provisions in the fleet, or of unanimity in the council, or some other unexplained cause, kept Villeneuve's ships in the harbor of Fort-Royal until the latter end of May (1805), when two of the 74's moved out to attack the Diamond Rock, which, with its sloop's company of officers and men, still persisted in firing at and annoying every French vessel that passed within range of its heavy cannon.

The expedition now destined to retake this very harassing and not informidable "King's ship," consisted of the *Pluton* and *Berwick*, 74's, 36-gun frigate *Syrene*, 16-gun brig *Argus*, *Fine* armed schooner, and eleven gunboats, under the orders of Captain Cosmao of the *Pluton*, having on board from 300 to 400 troops of the line commanded by the *Chef d'escadron* Boyer. On May 29, at half past five in the afternoon, the expedition sailed out from Fort-Royal. By the morning of the thirtieth the ships had not made much progress, but on the thirty-first, at daybreak, they were far to windward of the Rock and at seven bore down towards it. The Diamond had been blockaded ever since the arrival of the combined fleet at Martinique. Therefore Captain Maurice, when he saw Captain Cosmao's squadron sail out, guessed its destination, and prepared accordingly.

Considering it impossible to defend the lower works against such a force as was approaching, Captain Maurice abandoned them, spiking the two guns, drowning the powder, and cutting away the launch. At eight the ships opened their fire, which was returned by Hood's battery and Fort-Diamond, the one being the 24-pounder about midway up the rock, the other the two 18-pounders on the summit. The ships bombarded the rock during May 31 and June 1, and until half past four o'clock on the afternoon of the second, when Captain Maurice, having, as he states, "but little powder left, and not sufficient ball-cartridges to last until dark," threw out a flag of truce. At five the *Fine* schooner hoisted a similar flag; and terms honorable to the garrison, which consisted of 107 officers and men, were agreed to the same evening. The British sustained a loss of only two men killed and one wounded. The *Chef d'escadron* Boyer enumerates the loss of the French troops, "from a hasty calculation," at about fifty in killed and wounded. Captain Maurice considers the loss of the French, who landed at the foot of the Rock, to have amounted to at least thirty men killed and forty wounded, exclusive of what was sustained on board the ships and boats; three gun-boats and two rowing boats are stated to have been entirely lost. The French put their landing force at 260, but Maurice believed they had 1,500 ashore from first to last.

It was a gallant and useless defense. Captain Maurice, on his subsequent trial by court-martial for the loss of "His Majesty's late sloop Diamond Rock," was not only honorably acquitted, but highly complimented for his firm and determined behavior.

Two days after the surrender of Diamond Rock, Nelson arrived at Barbadoes and, almost coincidently, Villeneuve left Fort-Royal. Captain Maurice lost no time in sending to Nelson a report of the loss of the Rock, but, because of the latter's fruitless movement to Trinidad, the news did not reach him until June 8. However it gave definite confirmation as to Villeneuve's whereabouts and, on the strength of it, Nelson stood away to the northward on the chase that ended at Trafalgar.

M. Meyer

THE TAKING OF DIAMOND ROCK, MARTINIQUE, BY THE FRENCH. See page 1301.
(From the engraving by Chavanne after the picture in the Gallery of Versailles.)

International Newsreel

THE PHANTOM SHIP OF NEW ENGLAND

Here is pictured the "Phantom Ship" which was viewed nightly last summer by passengers on the ships traveling between New Bedford, Massachusetts, and New York. This vessel is anchored near South Dartmouth, Massachusetts, and is illuminated brilliantly at night. It is the old whaler *Charles Morgan* which is owned by Colonel R. H. Green, son of the late Hetty Green. Passing ships play their powerful searchlights on the old whaler, which is in itself well illuminated by floodlight projectors installed by the General Electric Company.

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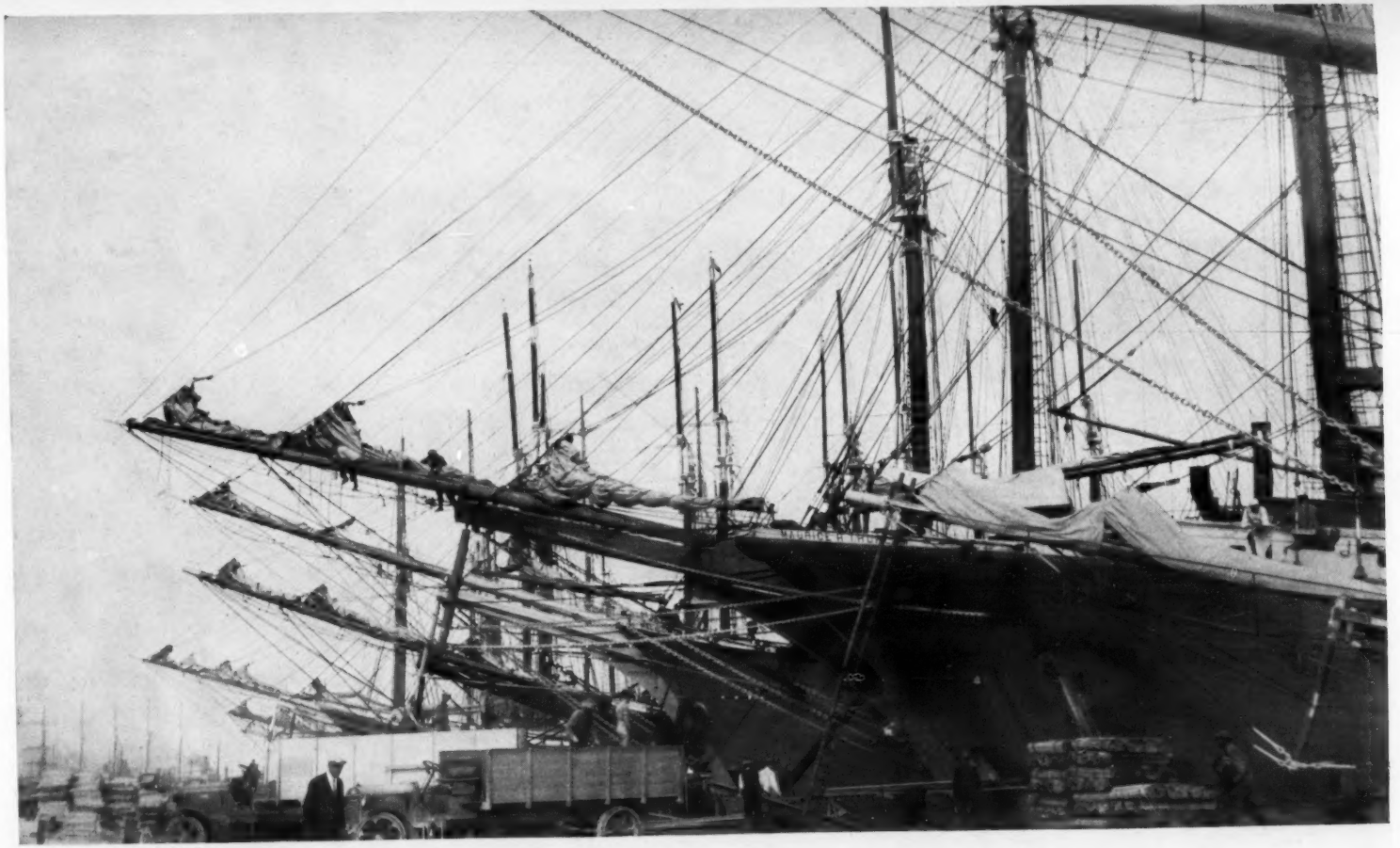

International Newsreel

"Calling on the Reserves" When the Florida Land Boom Was On

Miami harbor full of schooners which carried supplies to the city on account of the freight embargo on railroads.

International Newsreel

U. S. S. "TRENTON"

Picturesque view taken in New York Harbor shows the U. S. S. *Trenton* passing out to sea.

U. S. S. "TRENTON"

Picturesque view taken in New York Harbor shows the U. S. S. *Trenton* passing out to sea.

International Newsreel. © *Alfred H. Buckham, F.R.P.S.*

ABOVE A HEAVY SNOW STORM IN ENGLAND

Clouds at this point were over two miles in thickness. When descending a blinding snowstorm was found raging below.

International Newsreel

AIRPLANE FLYING THROUGH THE CLOUDS IN ENGLAND

International Newsreel. © *Alfred G. Buckham, F.R.P.S.*

A Stormy Day in the North Sea

One of the most unusual marine photos ever made showing a light cruiser almost covered by waves.

International Newsreel

ABOVE THE CLOUDS AND BELOW THE SUN

International Newsreel

The Ramparts of the Sky

International Newsreel

AIRPLANE FLYING THROUGH THE CLOUDS IN ENGLAND

International Newsreel. © *Alfred G. Buckham, F.R.P.S.*

In a Heavy Thunder Storm—England

This photo was taken in the midst of a heavy thunderstorm, lightning flashing through the clouds almost continuously. There was a strong flash of lightning, causing disturbances which somersaulted the machine.

International Newsreel

THROUGH THE CLOUDS ON A WINTRY DAY

International Newsreel

The Ramparts of the Sky

International Newsreel

AIRPLANE FLYING THROUGH THE CLOUDS IN ENGLAND

International Newsreel. © *Alfred G. Buckham, F.R.P.S.*

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THROUGH THE CLOUDS ON A WINTRY DAY

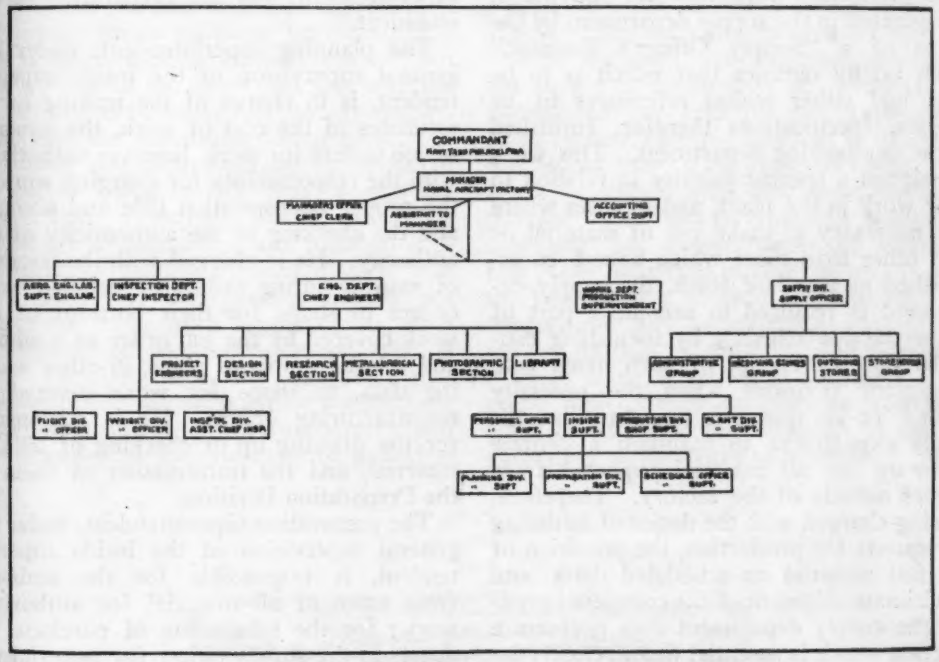
International Newsreel

A New Job *for the* Supply Corps

By Lieutenant T. E. Hipp, *(SC), U. S. Navy*

THE Naval aircraft factory at the Navy Yard, Philadelphia, was organized during the stress of the World War when naval officers were not available to recruit the organization and the work of airplane manufacture was a new departure for the Navy. The engineers and executives for the factory were procured almost entirely from civil life and the organization was so drawn as best to handle the factory's peculiar mission. Naval precedent and tradition had little place in the structure of the organization and the selection of personnel. The present structure of the organization, although in some particulars similar to that of the standard Navy industrial organization, presents certain salient and unusual features which may be of interest to students of naval industrial management. The following organization chart shows the Naval aircraft factory lines of authority and the relations existing among the different offices and sub-divisions of the main departments. Special attention is invited to the position of inside superintendent, to which a member of the supply corps was assigned May 15, 1923.

The two outstanding features of this organization are the centralization of engineering responsibility and the close interlocking of the functions of procurement, production and accounting. It is this second feature, of particular interest to supply officers and production superintendents, that this article will describe.



The coöperation of the supply department is essential to economical and expeditious production. Although, on account of de-

sirable central control, available space and favorable location, the supply department of the naval aircraft factory functions as a general storehouse for aëronautical supplies for the entire naval service, its prime and vital duty in the production system is the procurement and storage of raw materials and shipment of completed aëronautical equipment.

To perform such duties it is necessary to maintain an organization capable of securing the most satisfactory material required in the manufacturing processes, equipment and general supplies; to secure the most desirable delivery of material, keeping complete and accurate record of all unfilled purchase orders. *Navy Regulations* and orders provide for the manner of purchase, terms of payment and the recording and classifying of material after receipt. There are slight changes and modifications in the usual methods of storekeeping and recording at the naval aircraft factory in order to meet the needs of this particular industry.

All production work, however authorized, is originated in the supply department by the means of a "Supply Officer's Request," which briefly outlines that which is to be done, and either makes references to, or encloses, specifications therefor, furnished by the engineering department. This work is assigned a specific priority in relation to other work in the plant, and in cases where it is necessary to make use of material or tools other than those which have been established as standard stock, the supply department is required to become a part of the production schedule by furnishing estimated date of receipt of such items with subsequent revisions when the necessity arises. To do this it is necessary for the supply department to maintain a definite follow-up on all material expected from sources outside of the factory. Therefore, in being charged with the duties of initiating all requests for production, the provision of specified material on scheduled dates, and the ultimate shipment of the completed product, the supply department does perform a function which is essential to and closely interlocked with production.

Another department which is closely allied with and essential to the production organization is the accounting office. In the civilian industrial field, the manufacturer is dependent upon records of past performances and accurate cost records to enable him intelligently to operate his establishment to meet the keen competition encountered in making bids and estimates, and in providing a safe return and profit on the capital invested. Similarly in naval industrial organizations, and especially at the present time, due to the limited money allowances granted the bureaus to maintain and operate the fleet, it is necessary that intelligent cost data be furnished for the purpose of making estimates which will be useful in acquainting the department with the amounts that have been and will be obligated.

Taking into consideration this close interlocking of procurement, production and accounting, it was decided to request the assignment of an officer of the supply corps to the position of inside superintendent in the works department of the naval aircraft factory. The inside superintendent is the coördinator of the planning office, the schedule office, and the preparation division. His three principal assistants are the planning superintendent, the schedule superintendent, and the preparation superintendent.

The planning superintendent, under the general supervision of the inside superintendent, is in charge of the making of all estimates of the cost of work, the issuance of job orders for work, however authorized, with the responsibility for charging work to the proper appropriation title and account, and the checking of the authenticity of the authority. He is charged with the issuance of manufacturing orders or detailed work orders to shops for their portions of the work covered by the job order as a whole; and for the supply of plans, or other working data, to shops for work covered by manufacturing orders. He is responsible for the drawing up or checking of bills of material, and the transmission of them to the Preparation Division.

The preparation superintendent, under the general supervision of the inside superintendent, is responsible for the stubbing from store of all material for authorized work; for the submission of purchase requests to the supply officer for material not in stores, which is required for authorized work; for the maintenance of shortage lists of material for authorized work; for the operation of sub-storerooms, or material depots for raw material or work in progress, in the custody of the works department,

which is not being worked upon; for the operation of shop store rooms or material depots containing small amounts of material located within the shop areas, but which has not yet been stubbed from the supply officer's books. He is responsible for the operation of the salvage section, handling rejected material; he is in charge of the operation and maintenance of the factory transportation system, including operation of overhead cranes.

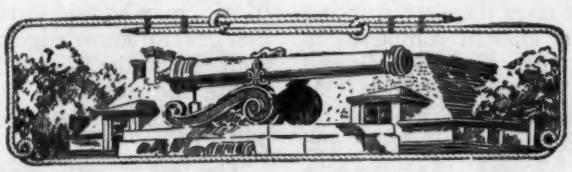
The schedule superintendent, under the general supervision of the inside superintendent, is responsible for the preparation and issuance of all works department schedules; for the maintenance of status reports on all work in progress; for the preparation of the weekly progress report, which is forwarded to the Bureau of Aëronautics; for the preparation of the monthly factory master schedule, which shows the general time-planning of work ahead of the factory, and for the maintenance of the work load on the various shops.

After analyzing these duties, it is apparent that the position of inside superintendent, which embraces these functions, is a central office, making intimate contact, not only with all of the shops, but also with the engineering department, the supply department and the accounting department. In requesting the assignment of an officer of the supply corps to this duty, it was believed that a supply officer, with his knowledge of accounting and material supply, could as quickly acquaint himself with those phases of this position usually not within the scope of a supply officer, as a line officer, or naval constructor, who is more familiar with the manufacturing problem; could acquaint himself with those phases related to supply and accounting, and furthermore, the experience to be gained in such a position should prove of great value professionally, in the future.

Due to the rapid growth and recognized necessity of aviation throughout the naval service, it is desirable that officers of the supply corps become familiar with the needs and requirements of this important branch of the nation's first line of defense, and it is believed that the naval aircraft factory, for the time being at least, is the best aviation school for supply officers in existence.

Having in mind a more far-reaching effect and influence, it is believed, that, not only will the duties described be of great benefit to an officer who might at some time or other be concerned with aviation accounting and supply, but surely a certain period of service within the organization of any industrial department will better fit him for the position of supply officer of a yard or vessel. Through such service, he has been able to observe the problems encountered; the cause and effect of the different policies, systems and requirements, all tending to make of him an abler executive with a larger and more coöperative spirit.

Why not then, assign junior officers in the supply corps to duty in industrial organizations for training and experience? Even further, carrying this idea to its logical conclusion, there is no apparent reason why a supply officer, with such experience and training, should not be eminently capable of assuming the responsibilities of directing any Navy industrial establishment. It is to the best interest of each corps to take advantage of any opportunity afforded to enlarge its field of activities, and especially, if by so doing, it arrives at a broader viewpoint, which tends to promote a greater spirit of harmony and efficiency in the organization of the Navy as a whole.



Some Practical Uses *of the* O'Rourke General Classification Test

By Lieutenant Commander R. A. Hall, *U. S. Navy*

During the past two years executive officers have been finding on page 9 of the enlistment record a notation which reads about as follows:

	G.I.	
1st ½ hr.	Full hr.	2nd ½ hr.
30	50	20
40	M.T.S. 20	60

This notation is the record of results obtained by giving the man in question what is called "The O'Rourke general classification test" while a recruit at a training station, and it is believed that a dissemination of information concerning the nature and object of this test will be of value to the service in general.

The test was devised by Mr. L. J. O'Rourke in collaboration with the training section of the Bureau of Navigation and is intended primarily to determine previous education, although, as in all tests of this sort, natural capacity as well as educational experience is bound to enter into the results obained. The test consists of 100 rather simple questions which are given to each recruit as soon as possible after arrival at a training station. It is conducted as follows: Nine minutes is spent in explaining the object of the test and giving instructions as to procedure, then work is started by all men simultaneously. At the end of half an hour men are required to draw a line at whatever part of the page they are working in order to show the amount completed in the first half hour; then they are allowed another half hour to complete the work. No questions are answered after the test is started and no review or going back and changing answers is allowed. As soon as a man has completed his paper it is taken up, and when all are finished the papers are graded by comparing the answers with a standard answer sheet. The notation as given on the record for the grade is obtained as follows:

Of the first two numbers the lower represents the number of questions answered during the first half hour, the upper represents the number of questions answered correctly during the first half hour. Of the last two numbers the lower represents the number answered in the second half hour, the upper represents the number answered correctly during the second half hour. Consequently the sum of the two lower numbers should be equal to 100 if a man has answered all questions, or to the total number he has answered in case he has not finished, and the sum of the two upper numbers should represent the number he has answered correctly during the entire hour. This latter sum is called the "General Intelligence Mark."

What is called the "Trade School Mark" or "MTS" is obtained by taking the number of questions answered incorrectly in the first half hour from the number of questions answered correctly in that time which is the same thing as twice taking the number answered incorrectly from the total number answered during that period.

The designation "Trade School Mark" is somewhat misleading as the earlier questions are no more mechanical in nature than the later ones. A better designation would be "Alertness Mark" or "Apprehension Mark." As a general rule the "General Intelligence Mark" may be said to indicate the education and general knowledge of the man being examined and the "Trade School Mark" to indicate the quickness shown in grasping a new subject or the accuracy displayed in a given time.

The test appears simple at first sight and theoretically any fairly well educated person with normal intelligence should be able to make a perfect score; that is, to answer the

100 questions correctly in half an hour, but in practice this is never done. The highest mark noted among approximately 9,000 tests given at one training station is 99 in general intelligence and 96 for the "Trade School Mark." The average officer when given the test makes from 85 to 95 in "General Intelligence" and 80 to 90 in the "Trade School Mark." The average for all tests given recruits to date is in the neighborhood of 55 for general intelligence and 40 for "Trade School Mark." The tests for all recruits were instituted in January, 1925, and the Bureau of Navigation will undoubtedly issue a summary of conclusions arrived at by study of the data obtained when enough has been collated to make their conclusions dependable.

The Bureau of Navigation Manual requirements for entrance to a service school specifies that the candidate must have a mark of 50 or better in his general intelligence test—in addition most service schools require a "Trade School Mark" of 46 or better. Candidates for the hospital corps training school at Mare Island are required to have a "Trade School Mark" of 50 while candidates for the musician and bugle schools may be satisfactory with a "Trade School Mark" as low as 30 or 35. These marks are used at training stations and should be used elsewhere only as a general guide, as there are exceptions in every test of this kind, but it is believed that as at present conducted the test is about ninety per cent reliable in its application. It may be suggested that some men, either because of misunderstanding the importance of the test or because of not caring what they make on it, are capable of much higher marks than they actually make. Granting this to be true, such negative information is of itself extremely valuable in indicating the state of mind of the recruit and his probable reaction to naval conditions and discipline. It has been found, however, that the average man given the test a second time will vary only from three to five per cent in his final score. This seems to show that the results of the tests as first given are generally reliable.

It has been found by experience at one training station that approximately eighty per cent of men who make zero for their "Trade School Mark" are in trouble of some sort during their period of training at the station. This trouble is quite often of a petty sort, due, as might be expected, to slow thinking and inability to adjust themselves, while more serious offenders are likely to be men of higher intelligence but who are not amenable to discipline.

The intelligence marks follow very closely the educational experience of the recruit and might be still closer if it were possible to obtain more accurate record of previous education than that given by the recruit, but the two curves do not coincide strictly and this fact gives a latitude in judging natural ability as distinctive from previous education. For instance, a man who has finished the eighth grade and makes a general intelligence mark of 60 and a "Trade School Mark" of 50 should be rated higher than a man who has finished high school and makes marks of 70 and 60, respectively.

The varying educational standards of different sections of the country also make it harder to judge a man's previous education. For instance, a record of two years high school in Massachusetts and in Maryland may mean very different things. Also, some states call the seventh, eighth and ninth grades "junior high school," and in the case of recruits from these states two years high school may mean that he has finished either the ninth or eleventh grade.

It is not to be believed that men with lower marks than those required for entrance to service schools will be of little value to the naval service. On the contrary, most men with general intelligence marks ranging from 30 to 50 and "Trade School Mark" ranging from 20 to 40 should make good, as their marks merely indicate lack of education or slower development than the men in the upper bracket. Men with marks lower than those last given are generally poor material and it is believed that a very small portion of them will last out a four year enlistment. It is possible that when sufficient data is obtained we may be able to set a mark below which a man is too poor a risk to be worth recruiting.

As an example of the consistency of results given by the O'Rourke test we will take the case of the forty-two men of the Naval Academy preparatory class at San Diego, who passed the entrance examinations to the Naval Academy in April, 1926. This was, of course, a very highly selective group and picked for officer-like qualities as well as for their ability as students. This group had an average "General Intelligence

Mark" of 91 and a "Trade School Mark" of 78. The lowest mark in the group was 82-48 and the second lowest was 90-63. This would indicate that a man with a "Trade School Mark" below 60 has less than a two and a half per cent chance of passing the entrance examinations for the Naval Academy.

While no claim of infallibility is made for this test, it is believed that an understanding of its nature will enable it to be put to good use aboard ship. This explanation is intended to promote this general understanding as at present the notation on the record is generally cabalistic and mysterious to anyone who has not happened to be associated with giving and recording the test. Opportunities for using it readily present themselves when the meaning of various symbols are understood—for instance, candidates for sight-setters should be picked from men with a high "Trade School Mark" as this position demands maximum ability in quickness and accuracy. Candidates for yeomen or yeomen strikers should have a high mark in general intelligence as their duties call for more general knowledge and the time element is secondary to a general grasp of the situation. In any case much lost motion in training men for positions where a high degree of intelligence is required can be eliminated by consulting these marks, as on account of the short enlistments it is most desirable to train men who will absorb the required knowledge in the shortest possible time.

To recapitulate; in the example given:

	G.I.	
1st ½ hr.	Full hr.	2nd ½ hr.
30	50	20
—	—	—
40	M.T.S. 20	60

means that the subject man answered forty questions during the first half hour, thirty of them correctly. That he answered all questions during the entire hour, half of them correctly. That he is slightly below the average in general education and intelligence and well below the average in alertness and thoroughness. That, if he has good physique and is given proper supervision, he will probably make a valuable second loader and holystone operator but is a poor risk for training in a pointer group.

Note: Since this article was written the Bureau of Navigation has established a uniform notation for Page 9 of the enlistment record which reads as follows:

Classification during Recruit Training
School grade reported.....
General Classification Test.....
Mechanical Aptitude Test .....

This notation will appear on the records of all recruits received in the future from training stations, "School grade reported" is in addition to information formerly given.

"General Classification Test" corresponds to "General Intelligence Mark" and "Mechanical Aptitude Test" corresponds to M.T.S. or "Trade School Mark" as given in the body of the article.

Condition *and* Needs *of* Our Navy, 1815

By the Board of Navy Commissioners
Captains David Porter and John Rodgers, U. S. Navy

EDITOR'S NOTE: The Editor is indebted to Rear Admiral M. M. Taylor, U. S. Navy, for the following letter found among some old family papers. There is, indeed as Admiral Taylor writes, "a marked similarity between present ideas and those of one hundred and fifteen years ago."

REPORT of the Board of Navy Commissioners upon subjects connected with the Naval Establishment of the United States, made in pursuance of the request of the Secretary of the Navy, dated November 20, 1815, and enclosing a resolution of the Senate of February 28, 1815.

Navy Commissioner's Office
November 25, 1815

The law authorizing the establishment of a Board of Commissioners of the Navy, makes executive interference necessary to a construction, and has unavoidably left the subject still involved in difficulties. The commissioners, from that reserve which unavoidably attends an exercise of powers which are doubted, have not since their appointment been enabled, by a practical exercise of duties pointed out to them by law, to extend as far as is desirable, their knowledge of matters connected with the naval establishment of the United States. Their report must therefore be founded on the experience acquired, chiefly, during their more active and arduous services, and under circumstances when the mind, preoccupied with matters more immediately affecting their own particular commands, was not enabled to take that extensive view of the subject, which would place it in the power of the commissioners to perceive and point out a remedy for all the evils which at present exist in the Navy. But with all the difficulties under which they have labored, enough has been perceived by them to demonstrate the absolute necessity of a reorganization and reform in the Navy; and under this impression, uninfluenced by any considerations but those which arise from an ardent wish for the good of the service, they will venture an attempt to trace the evils of the present establishment to their source and to point out adequate remedies for them. In doing this, if they have availed themselves of the experience and knowledge of others, it was from a real sense of the fact that experiments are rarely brought to perfection on the first essay; and that precedents, coupled with their own experience, if not an infallible guide, would at least lead to a course as little liable to error as any that might be suggested.

England has availed herself of the experience of other nations and even now does not disdain to adopt into her naval service the inventions, improvements, laws and policies of others. The ships of other nations being more perfect than those of England, are more highly prized by her than those of her own construction. The officers of her navy are, on all occasions, particularly instructed to transmit home all such information as they may obtain in foreign countries, on subjects connected with naval matters. By various means England has possessed herself of all the naval information of the world and from the knowledge of other nations, to a certain degree, has perfected a system, which, notwithstanding many essential defects, may be considered as the most efficient known at this day.

The United States, almost unaided by the experience of Europe and guided by her own skill and ingenuity, has entered the lists with England and in genius has already proved her equal. Our naval victories have made us acquainted with much of the British System, which, with few exceptions, might with propriety be adopted by us; for, with such a system properly enforced, that practical skill which is peculiarly our own

would give us the advantage over every nation on the globe.

The ships of the United States are constructed upon a plan of their own and have been found to answer every purpose. In the absence of a general system they have been equipped according to the fancy of their respective commanders, each adopting his own rules and regulations, establishing his own mode of discipline, and then sailing in pursuit of the enemy. Much has been left to his own discretion and to his own responsibility. Thus far the successes of the Navy have exceeded the most sanguine expectations of the nation. The public have been satisfied with the brilliancy of its exploits and have not cared to inquire into the expenses of the Navy Department, nor into the cost at which their victories at sea were obtained. Neither have they reflected that by adopting at once a general system of economy, the means of multiplying those victories at any future period would be augmented and that by establishing a general system of discipline the nautical knowledge we now possess would be diffused more generally throughout the Navy. There are but few officers of great experience at present in our Navy and most of them entered the service when the first keel of the present Navy was laid. They have grown with its growth—and by the most unremitting attention and assiduity have acquired the knowledge they now possess. During the late war it was they who commanded our ships and gave a character to our Navy. Some have fallen—others are advanced in years—and all must soon cease to exist.

The Navy has rapidly but necessarily been increased—and in proportion to this increase promotions and appointments have taken place. Under these circumstances, the premature advance of inexperience has unavoidably occurred, and a new race of officers, possessing all the fire and spirit necessary has sprung up—whose experience, owing to the nature of the service in which a large portion of them has been employed, has not kept pace with the growth of the navy. We have now lieutenants who never served a day at sea, and commanders who have served only in gun boats or navy yards. Many of these feel their own incompetency to discharge the duties of the station to which they have been raised, and in order to shield themselves from the responsibility attached to these duties, willingly retire to situations where, in their opinion, neither talents nor exertions are required. The numerous navy yards, scarcely exceeded by the number of our effective ships, offer retreats to these, as well as to all others, who either mistrust their own talents or are not highly estimated by the Navy Department. In these yards they are placed to relieve their own embarrassments and to prevent their coming into collision with officers who have enjoyed better opportunities of obtaining information. Thus officers of indolent or irregular habits, as well as those who are incompetent to other more important services, have turned their attention to these establishments which have increased in number as rapidly as the numerical force of our Navy, and which while they remain (except a remedy be applied) must forever continue a dead weight to the service and a burden upon the country. Into most of them practices have gradually crept highly prejudicial to the general interests of the United States, and more particularly to the Navy itself; which has not found in them those resources it had a right to expect. Some of the yards were created for purposes which the commissioners are at a loss to comprehend—others are at this time totally useless on account of their inadequate depth of water for our heavy ships; and of the whole number now in use, there are but two which possess the requisite conveniences, and these two situated so near each other that one of them might be easily dispensed with.

Having thus explained the necessity of a reduction of the number of navy yards, the commissioners cannot conclude this part of the subject without earnestly suggesting the policy and propriety of increasing the importance of such one of the yards as shall be deemed most suitable for every naval purpose, and the establishment of one or two others at proper sites and upon a similar scale—being fully persuaded that this alone can eradicate that destructive system which already borders so closely on, and ultimately must end in, corruption. They have endeavored by the aid of that knowledge already infused into our Navy, and the experience of foreign nations, to perfect such a system of rules and regulations for the government of it, as will, amongst other things, increase the utility of the inexperienced officers, and deter the useless members of the service from seeking situations where their ignorance cannot but appear more pal-

pable. In addition to which, they hope so to arrange the materials of which they are possessed, as will enable the inexperienced to profit by the labors of others, and to hand down to their successors the fruits of the labors of the most experienced men—as one important medium of securing the future prosperity and fame of the Navy.

The system of classification, and rules and regulations herewith presented, possesses much originality. Some imperfections may possibly be discovered in carrying them into effect; but the commissioners are notwithstanding induced to believe them less liable to objection than those of any other nation. They have endeavored to incorporate the perfections of all, with such regulations of their own as were deemed unexceptionable and have also ventured to lay before you "the act for the better government of the Navy of the United States" with such slight alterations as, in their opinion, will better adapt it to the purposes for which it was originally intended.

With a view to the promotion of general economy and convenience, the commissioners have had under their consideration the subjects of navy yards and of dry docks, and now beg leave to submit the result of their deliberations.

The points for consideration were:

1st. How many navy yards are necessary?

2nd. What description of navy yards is most proper?

3rd. Whether the sites now occupied are the most suitable? If not, what are the objections to them, and where could they be located to more advantage?

4th. Whether dry docks are necessary, and, if so, what number and kind are required?

5th. What number and description of officers should be attached to each yard?

Upon these points the commissioners unanimously decided as follows:

1st. That three navy yards, and only three, are necessary.

2nd. That each of the three yards should have attached to them a dry dock, suitable for docking the largest class of ships, and sufficiently capacious to accommodate five sail of the line and ten frigates, and fitted moreover with store houses, and every other necessary convenience.

3rd. That all the sites now occupied as navy yards are not suitable for the purpose.

The sites at Charlestown, Massachusetts, and Portsmouth, New Hampshire, are in the opinion of the commissioners, unexceptionable, but from their proximity are not both deemed necessary. Of the two, that at Charlestown is entitled to the preference, because it has many conveniences and improvements which that at Portsmouth has not. It is situated near a harbor equally safe and defensible—is equally, if not more, accessible; and is immediately in the neighborhood of a large, populous and wealthy city, affording artificers, laborers and materials in greater abundance than Portsmouth.

New York is objectionable on account of its barred harbor, which can only be navigated by frigates, and then only in safety by those of a light draft of water. In addition to which it is obstructed, at times, by ice.

Philadelphia is liable to the same objections. The danger of navigating the Delaware and its obstruction by ice are obvious. You cannot carry to Philadelphia more than eighteen feet of water, and with this depth no ship of the line or heavy frigate could be carried along without the agency of camels or other buoyant preparations.

The yard at Baltimore is useless, owing to the shoalness of the river by which it must be approached, and its great distance from the sea.

The yard at Washington, when viewed as a building yard only, would be less objectionable, were the navigation of the Potomac deeper and its obstructions fewer. But it is the decided opinion of the commissioners, that these obstructions and its distance from the sea, render it unsuitable for any purpose but that of a building yard.

The yard at Norfolk is liable to objections on the following grounds. The navigation is too shoal for line of battle ships, and the passage difficult for vessels of every class. Ships can at no time get to sea with the same wind with which they leave the yard—neither can they get to sea at all while an enemy of superior force is in possession of Hampton Roads. This was fully demonstrated by the detention of the frigate *Constellation* during the whole of last war.

To the yard at Charleston, South Carolina, no vessel of a size larger than a sloop of

war can, at any time, approach, and then only with great risk at high tide.

The Commissioners cannot at this time take upon themselves to designate all the places in the United States most eligible for the establishment of navy yards. Charlestown, Massachusetts, is unexceptionable. Rhode Island has, upon examination, been found to offer a place equally unexceptionable, and an officer of the Navy is now engaged in surveying York River, Virginia, which is believed to possess the greatest advantages for a naval depot of any place on our southern coast.

4th. Dry Docks are absolutely necessary. There should at least three be erected, sufficiently large to dock the largest class of ships, and furnished with locks or steam engines.

5th. Upon this point the comissioners have determined that to each yard, the following persons should be attached, viz.:

1. Superintendent, whose rank should not be below that of post captain; 2 lieutenants, 1 master, 1 purser, 1 storekeeper, 1 boatswain, 1 gunner, 1 carpenter, 1 sailmaker, 1 mast maker, 1 blacksmith, 1 armorer, 1 blockmaker, 1 boat builder, 1 joiner, and 1 measurer and inspector of timber.

In forming their opinions in regard to the navy yards now occupied by the United States, the Commissioners have considered that every obstruction to navigation constituted a serious objection to the location of a yard—that the objection became stronger in proportion to the increase of these obstructions; and viewing the navy, as it now is, composed of ships of the line and heavy frigates, as well as smaller vessels, they are decidedly of the opinion, that no yard should be occupied which cannot safely and conveniently be approached by ships of the largest class. In deciding upon the number of navy yards which we ought to possess, the commissioners have kept in view the present state of the Navy, and its gradual increase; and under this impression they have given it as their opinion, that three yards are absolutely necessary. As the navy increases, the size of these may be proportionately enlarged.

In the manuscript volume marked No. 1 accompanying this report, copies of several letters sent from the office of the commissioners will be found, by which their views upon certain subjects were made known. Among these documents is a letter addressed to the Commissioners of Navy, hospitals, to which subject they would beg most earnestly to invite their attention—a subject, so interesting in its nature, to the navy—to the general character of our country, and to humanity, that they persuade themselves you will readily accord to them your indulgence for not passing it over in silence. As an essential prerequisite to the establishment of a naval asylum, the commissioners have, with the aid of medical officers, of great experience and high professional talents, projected a system of rules and regulations for its government, whenever it shall be established. These rules and regulations may be found in No. 1.

With a view to the gradual and permanent increase of the Navy, the commissioners respectfully recommend, that one ship of the line, two frigates of the first class, and two sloops of war of the first class, be built annually. This, they believe, would not only make up for the decay of such of our ships as are now old, but occasion an increase proportioned to the increase of experience in our naval corps. They would also recommend, the collection annually of timber, cut to molds, and deposited securely in sufficient quantities to build an equal number of vessels. This timber should be so prepared and arranged, as to admit of the frames being set up and the ships built at the shortest notice. They would also advise the construction of dry docks at Boston, Rhode Island, and at some place on the Chesapeake not far distant from the sea, and of sufficient depth of water to admit the approach of ships of the line.

The commissioners also lay before you an estimate of the expense of completing, and a plan for the erection of, dry docks at Boston, and at Rhode Island, and a report of survey made by their order—that the most satisfactory information might be obtained preparatory to the making of a suitable establishment at that place. Similar measures have been taken with respect to York river on the Chesapeake, under the belief of its being the most suitable site, and that it unites all the advantages necessary for the accommodation of a naval depot and arsenal—at the same time it will necessarily be the general rendezvous for ships on our southern stations, and afford ample protection to the shores of the Chesapeake and our southern coast. The Com-

missioners are of opinion that an important establishment upon York River, and the using of the navy yard at this city as a building yard, causing the vessels of the United States to be constructed under their own inspection, would ensure many advantages arising from economy, uniformity and perfection in their form of construction. They are also of opinion that by a sale of the useless navy yards now occupied and described in the foregoing part of this report, not only a great reduction would be occasioned in the annual expense of the navy, but that with the proceeds of this sale a sum could be raised, sufficient to meet half the cost of erecting new and complete establishments.

The annual expense of a complete dock yard, suitable for all the purposes of our navy in its present state, would not exceed the annual expense of the yards at Philadelphia and Norfolk—to neither of which can a large frigate, with her guns, stores and provisions on board, approach. The number of officers and men maintained at these inferior establishments, seldom visited by our ships, is equal and in some instances more than sufficient to meet the exigencies of such yards as the commissioners would recommend. There are also other inferior establishments, growing out of the situation of affairs created by the last war, and still kept up although now useless. The expenses incurred by the support of these, is not inferior to that required for the support of others, and not only assists in swallowing up the appropriations made by Congress for the Navy, but at the same time retards the progress it would under other circumstances be enabled to make.

The annual amount of funds required for the support of navy yards and other establishments does not at this time fall short of half a million dollars. The annual expenses of three navy yards, fitted with dry docks and all other necessary conveniences, would not, it is believed, amount to more than $150,000, which consequently would leave about $350,000 to be appropriated to the increase of the navy. A ship of forty-four guns costs for the hull, masts and spars $95,000—therefore by a reduction of the number of navy yards alone, there would arise an annual saving of a sum nearly equal to the expense of building four frigates of the first class.

The commissioners, with a view to remedy the want of professional skill which has necessarily resulted from the kind of service in which many of the officers have been employed, recommend the establishment of a naval college, for the instruction of the midshipmen of the service in a knowledge of those branches of education, equally requisite to the promotion and perfection of the naval officer. This, added to the instruction they would receive, at regular periods of actual service at sea, would, it is believed, perfect them in the knowledge necessary to enable them to pass an examination (which should always be indispensable) before the board of navy commissioners, or such others as they may appoint. An institution like this would also have the effect of enabling the Department to diffuse a general knowledge of the system of rules and regulations and of classification, into the minds of the younger members of the service; and thus, by making a knowledge of this system, part of their education, produce a lasting benefit to the service and the nation.

The commissioners also recommend the establishment of a national foundry, and of an Ordnance Department, for the Navy—the want of which has been long and severely felt; and the consequence has been the introduction into our ships of a variety of ordnance, some of a nature calculated to endanger the lives of those employed in serving the pieces, and to render the success of our arms very doubtful. In the system of rules and regulations for the government of the Navy, the commissioners have always kept in view its gradual increase, and calculated on the probability of its attaining, in a short time, the magnitude of ten or twelve sail of the line, and a proportionate number of frigates and sloops of war. They, therefore, have not hesitated to name the description of officers which a navy of that size would require. Their rank and title differ somewhat from those of other nations, but not to that degree which would prevent their standing from being immediately recognized in foreign countries. Were our navy to remain upon its present establishment, policy, independently of every other consideration, would dictate the propriety of creating a higher rank in our service than that which it now has. At present, we have no rank above that of captain, and every officer of that rank is upon an equal footing in respect to pay and emoluments. There is no higher situation, upon which the mind can build its hopes. All captains have arrived at their

zenith, and the only motive to ambition, is the applause of their fellow citizens. This, although highly gratifying to those who have had the happiness of attaining it, produces no lasting benefit to them.

Having therefore, no further hope under present circumstances, for a further elevation in the service, their attention to that ease which is naturally desired by men after a life of labor and fatigue, induces them to seek for situations on shore with as much eagerness as they formerly did those at sea, while the mind was operated upon by a proper stimulus. By creating the ranks of admiral and of commodore, a fresh impulse would be given to the mind of the captain, and to all others whose ideas had not extended beyond the qualifications necessary to prepare them for the command of a single ship. They would then direct their attention to the acquirement of more extensive information, and especially to that which would enable them to conduct the movements of fleets and squadrons. No nation having a navy equal to that now proposed by the United States, is destitute of the rank of admiral, and no navy has made greater efforts to earn a title to that rank.

In graduating the scale of officers, the commissioners have considered it necessary to class lieutenants. Some of these officers on account of the variety which from particular causes have been introduced into the service, have been prevented, as has already been observed, from acquiring the information necessary to qualify them for the duties of responsible stations on board of our ships, although they possess, in other respects, much merit. These have been kept from active service at sea, as the date of their commissions gives them a rank over officers of more experience. By classing the lieutenants, this difficulty would be at once surmounted. Those of the greatest experience may be placed in the highest classes, and the apparent ease with which they may then be raised from one class to another will speedily occasion the meritorious to obtain those situations in which their services will prove most beneficial to their country.

With a design to exclude improper characters from the service, the commissioners have recommended a period of probation of all candidates for the station of midshipman; and in order that merit alone may govern promotions in the Navy, they have also recommended the necessity of serving at sea in certain grades for such a length of time as will enable the candidate to acquire the information necessary to prepare himself for a discharge of the duties of the station to which he may be raised.

Besides the framing of rules and regulation for the government of the Navy, the progress they have made in the system of classification, the daily duties of their office, and the obtaining of necessary information relative to the Navy Department, the commissioners have been able to do little else. They have, however, taken steps to make themselves acquainted with the most approved situations for procuring timber for naval purposes, although in this, as in many other matters of equal importance, they have made but little progress. Proper persons have been sent to make the necessary inquiries, and their reports have been received. Still sufficient information has not been obtained to enable the commissioners to point out the most eligible courses to be pursued on this interesting subject. They are satisfied, however, that no difficulty wil occur in procuring from the southern section of the Union, ship timber of the best quality, and adapted to every naval purpose, whenever the views of Government shall be made known to them.

The repairs of the navy yard at this place have commenced. The mold loft is not yet completed. Until that shall be done and the necessary molds prepared, the commissioners have not deemed it advisable to commence the felling of timber.

From inquiries that have been made on the subject, and the information already collected by them, the commissioners are satisfied that copper, canvas and every other material for the use of the Navy, may be obtained with facility, of the growth, produce and manufacture of the United States. The commissioners exult in the idea that we are not now dependent upon foreign nations for any article whatever necessary to the building and equipping of a fleet of ships, capable of giving due protection to our commerce and of annoying an enemy.

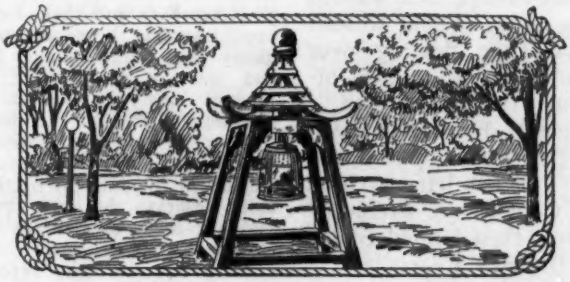
Exclusively of the inexperience of many officers of the navy, the commissioners have also to regret that there are attached to the service, a number of very unsuitable characters—who have never rendered any service to the country and whose general habits and practices will soon render them unfit for any

useful employment. Many years have elapsed since the Navy was pruned and, since that period, several improper characters have been admitted into it. Many of these have become addicted to vices; and an absolute necessity now exists for the dismissal from service of all such as may have from improper motives kept aloof in seasons of danger, or from immoral habits and practices, or other causes, be incompetent to discharge, with credit to the Navy, the duties appertaining to the stations they hold. The commissioners are persuaded that the most beneficial results would follow a measure of this nature, and the service be thereby relieved from the shame and inconvenience of such characters. The government too would be rid of the burthen of maintaining them, and the officers retained in service would share the honest pride of knowing that their merits had not been overlooked.

The Commissioners have endeavored to insure responsibility in the subordinate agents of the Department, by means of a quick accountability; and in the event of failure by inflicting upon the delinquent the immediate punishment of his offense in heavy penalties. A recurrence to those parts of the rules and regulations, relating to Navy agents and pursers, will explain more fully the object of the commissioners on this point.

The several forms required for maturing the system of classification, and the framing of rules and regulations for the government of the Navy, having necessarily occupied much of the time of the Commissioners—these, in addition to the want of a full Board, have scarcely permitted them to attend to the daily duties of their office. Voluminous therefore as the documents accompanying this report appear, they may still perhaps not equal the views and wishes of the Government. The system, as it now stands, is not yet complete. It forms the ground work upon which the superstructure is to be built, and many minor provisions remain still to be incorporated in it, to which the Commissioners have not been enabled sufficiently to devote their attention. They flatter themselves, however, that enough has been done to satisfy the Government of their industry, their zeal and their sincere desire to discharge faithfully the important duties confided to them.

JOHN RODGERS AND D. PORTER



A Tripolitan Fragment

By PHILIP PRATT

A BURST of flame, searing the darkened harbor of Tripoli on a black night in 1804, is seemingly the last vestige of evidence in the death of Captain Richard Somers.

The end of that gallant officer and his followers aboard the powder-laden ketch *Intrepid*, which weighed for the Corsair stronghold, only to fade into darkness and vanish in a distant sheet of fire, has long been a mystery. It has been surmised that the vessel, which was to have been blown up in the midst of the Bashaws' fleet, then blockaded in the harbor by Commodore Preble's squadron, was destroyed by accident, or in an overwhelming attack by Tripolitans. Preble and his officers, however, believed that Somers, in order to prevent the capture of the vast quantity of explosives in her hold, leaped into the cockpit during a fierce but hopeless fight and applied the torch himself, thus hurling friend and foe alike to eternity. This is the most dramatic—and naturally the most popular—belief of tradition-loving Americans, and is, indeed, thoroughly in keeping with the character of the heroic commander. That Somers immolated himself and his devoted little band of volunteers rather than allow their precious cargo to fall into enemy hands, has never been positively substantiated; only the bodies of brave men, washed ashore in the shadow of an ancient Roman arch, and bits of wreckage floating over the scene of the *Intrepid's* exit mutely attest a courageous though futile expedition.

There is a document, however, which tends to crystallize the early opinions of Preble and Decatur. This is a letter written in January, 1805, to Commodore Preble by General William Eaton, then United States Navy Agent to the Barbary Regencies.

Eaton, it will be remembered, was that venturesome soldier and diplomat who formed a band of mutinous nomad Arabs, renegade Greeks, and cut-throat Turks which he marched and browbeat 600 miles across the blazing desert of Barca in 1805 to capture the fortified city of Derne, citadel of the largest province in Tripoli. Prior to this remarkable expedition, which compares favorably to some of Thomas Lawrence's exploits in the World War, Eaton went to Egypt to make his preparations for the campaign. Early in the Tripolitan War, when he was American Consul to Tunis, he had conceived a plan to depose the usurping Bashaw of Tripoli, Jussuf Karamanli, and establish his brother, Hamet, the rightful ruler, on the throne. This could be accomplished only by land coöperation with the American squadron then blockading the Corsair navy, and Commodore Samuel Barron, when he relieved Preble of the command, authorized the project. At this time Hamet had taken refuge among the Mamelukes in Egypt and Eaton sought him there.

At Cairo he sent couriers after the fugitive Bashaw and proceeded to Demanhour where he went among the Tripolitan emigres to recruit Hamet sympathizers for his tatterdemalion army. Here he made the acquaintance of a recent fugitive from Tripoli, whom he questioned closely. During the conversation the man spoke of the destruction of the *Intrepid*.

The following extract from Eaton's letter to Preble written the day after the interview, and headed, "Egypt, Province of Behera, Village of Demanhour, January 25, 1805," throws an interesting light on the subject.

> I busied myself in finding out the Tripolitan emigrants in this country, their attachment to the rival brothers and their feelings towards Americans. Among these one appeared who was only ninety days from Tripoli; an Arnaut Turk, who had been in the service of Joseph (Jussuf) Bashaw during the blockade last summer, whom I had under particular examination. Supposing himself to be conversing with an Englishman, he was unreserved in his confessions, and, being decidedly in the interest of the enemy, ... his story deserves the more credit. He said Tripoli had lost many men in the attacks of the Americans last summer. . . . . *He confirmed the account of the fire ship "Infernal" (Intrepid) being blown up by Captain Somers after having been boarded by two row galleys.*[1]

This brief contribution of Eaton's to the long mooted question of Somers' fate, coming, so to speak, from the enemy's camp, seems, to the writer at least, to strongly support the popular version of that heroic officer's final decision and last mortal moment.

[1] Writer's italics.

DISCUSSIONS

Air Mapping

(See pp. 777 and 793, July, 1927, PROCEEDINGS.)

LIEUTENANT LEONARD DOUGHTY, JR., U. S. NAVY.—A great deal of nonsense has been published recently on the subject of air mapping. The accounts of the Alaska survey in the newspapers and the *Scientific American*, and the present article by Lieutenant Boyden give the casual reader the impression that merely by taking a string of air pictures and pasting them together there is produced a map, "so exact as to satisfy the rigid requirements of civil engineers," to quote Lieutenant Boyden's article. Unfortunately such is not the case. These patchwork affairs undoubtedly have their uses, and for many purposes may be adequate, even to a civil engineer. However, a degree of accuracy which might render a map suitable for planning a cow-path, for instance, might leave it practically useless for a water power project, or as an accurate survey or for directing artillery fire. In fact these mosaics cannot be called maps at all, in the engineering sense of the word.

In the case of hydrographic surveys, where the coast line is principally what is desired, the problem is considerably simplified, the coast line lying in a horizontal plane, and accuracy being important in only one direction, the direction of the coast line. For this problem the method described in Lieutenant Ramsey's article is adequate. This is true, however, only because of the special nature of the case, and not, as he implies in his last paragraph, because of any lack of accuracy in "more elaborate methods." For a land survey suitable for a civil or a military engineer more elaborate methods are indispensable.

A great deal of work has been done on this problem, especially in Germany. The developments there were described by H. Lüscher in *Engineering* (British), 123, pp. 63-65, January 21, and pp. 185-189, February 18, 1927. Notable developments have also been made by Brock and Weymouth of Philadelphia, whose process was described at length in the March, 1926, number of the *Proceedings of the American Society of Civil Engineers*. By this method air maps are made which are actually more accurate than the ordinary field survey. The method is extremely intricate and ingenious, and it is surprising to find it ignored in a discussion of this subject.

Even in constructing the ordinary mosaic map it is difficult to see how satisfactory results can be obtained without using some such process as that described in "Aërial Surveying by Rapid Methods" by Jones and Griffiths. In this method elastic bands are used to equalize the errors and distribute them evenly. Without some such method, errors are cumulative, until a point is reached where two adjacent pictures cannot be matched at all.

To make an accurate map the errors are eliminated as follows:

Errors due to lens and shutter. These are instrumental errors which can be rendered negligible by improved instruments.

Errors due to shrinkage and stretching of film or paper. These errors are eliminated entirely by using glass plates for both negative and positive. Their use for positives also facilitates rephotographing, illuminating, and projecting in the stereopticon.

Errors due to tilt. Even a small tilt, which may be ignored in a hydrographic survey, would destroy the accuracy of a land survey. The direction and amplitude of the tilt are computed by means of control points on the ground, whose position and elevation are determined by survey. The

plate is then rephotographed in a frame which holds it at such an angle as to produce a rectified picture.

Errors due to variation in height of plane. These errors must be corrected even if small, because they affect the accuracy of subsequent steps. The variation in height is obtained by using the control points on the ground, and is corrected by re-photographing, which enlarges or diminishes the picture to the proper size.

Errors due to difference of elevation of ground. These can be corrected only by first drawing the contour lines. Even though contour lines are not required in the finished map this process must be followed to produce an accurate map. The stereoscopic sketching method described by Lieutenant Boyden produces merely an impressionistic picture, and is of course unsuitable for this purpose, however valuable it may be for other purposes. Various methods have been devised for drawing the contour lines accurately, all based on the fact that all points at the same level have the same difference in parallax in the two overlapping pictures, this parallax being measured in the direction of flight, from one of the control points. In the Brock method two overlapping plates are viewed stereoscopically, and cross hairs in the two viewing glasses appear in depth in the stereoscopic image. By moving the frame supporting the eye piece around, a point on the ground may be found at which the intersection of the cross hairs appears to lie on the surface of the ground. A series of such points are located, and joined by a pencilled line, which is an accurate contour line. Distance between plates is varied by a micrometer, an amount proportional to the difference in parallax of successive levels, and thus all the contour lines are drawn.

After all the contour lines are drawn, there remains the problem of eliminating the errors due to difference in level. Every point on the picture is displaced radially from the center an amount proportional to its elevation and its distance from the center. To correct this distortion, the picture is projected onto a screen of tracing paper by means of a stereopticon in such a way that the scale of the projection can be varied, the center remaining the same. The scale is adjusted to correspond to a certain level, and that particular contour line is traced on the paper, together with all adjacent topographical details, such as roads, buildings, etc. Then the scale of projection is varied to correspond to the next contour line, which is then traced, until the entire plate is covered.

The tracing thus produced is an accurate engineering survey, and any number of adjacent ones may be united to cover any area. Inasmuch as such improved methods, which are more rapid, economical and accurate than ordinary surveying, are in existence, it is hard to see why they are not more widely adopted.

Flight Training of Student Naval Aviators

(See page 764, July, 1927, Proceedings.)

Lieutenant Commander Harold E. Snow, U. S. Navy.—My views in the following discussion are based largely on my observations as a student at Pensacola from August, 1926, to December, 1926, and my Flight Record Book shows but twelve hours, thirty-five minutes solo in N9's. Incidentally I was most fortunate in having as my instructor—Lieutenant Studley.

Since, "a little learning is a dangerous thing," I will confine my remarks to the earlier stages of primary training in sea planes.

The article under discussion covers the established procedure and routine training at Pensacola completely. Lieutenant Studley, whose student days were long ago, does not give much space to the reactions on the part of the student during his first two or three weeks at the air station, which have an important bearing, psychologically, on his early flights. At least, this is the student's viewpoint of the early stages of flight training. From the moment that an officer arrives in Pensacola, he finds himself in a strange environment. He experiences new joys, disappointments, thrills, all in his day's work. The uncertainties and hazards of the game produce in him a feeling of tenseness and exhilaration. His relative values rapidly change, and he has a new outlook on life. A "war-time psychology" as distinguished from a "peace-time psychology" is in the air at Pensacola. This nervous excitement felt by the student of little or no previous flying experience normally grows less as time goes on. He is afflicted at first with air-shyness, a perfectly natural state of affairs. A real taste for flying has to be cultivated, notwithstanding much that has been said to the contrary by air enthusiasts. If a student feels perfectly natural in his first tail-spin,

there is probably something wrong with him.

I have dwelt on the initial impressions of Pensacola and the flying game because I consider them of some importance. The fact that all this newness has to be assimilated, leads up to the question as to whether two hours of familiarization hops given a novice, place him on a par with another student who has had twenty to thirty hours in the air previous to his arrival in Pensacola.

Lieutenant Studley states that an officer with no flying experience has no appreciable disadvantage. Nevertheless, the enlisted men detailed from the air squadrons, that take the aviation pilot course, average a high percentage of successful graduates; and older officers are now given preliminary training at Hampton Roads, or elsewhere, before ordering them to Pensacola, as are Naval Academy graduates beginning with the class of 1926.

It seems to me that the "feel of the air" is not a heaven-sent gift to the majority of students, but is something that must be developed. The man of some air experience has a head start in learning to fly.

Before I departed for Pensacola, one of the pioneers in aviation gave me advice to the effect that if he were in my status, he would go to a Curtis Flying School, learn how to fly, keep it dark, and then go to Pensacola. So there is a difference of opinion as to methods of preparation for Pensacola.

Undoubtedly some fliers are born and not made, as are some sailormen. But we have many distinguished naval officers who had no heritage of the sea; and, as aviation is in its veriest infancy, there must be many aviators who never dreamed that their careers would be in the air. They went into aviation for a dozen different reasons, without any call of the blood; and today, after the necessary preliminary training, augmented by many flight hours, are doing splendid work as aviators. This condition is still more in evidence in the older officers performing duties in connection with aviation, who had many years at sea before turning their thoughts to flying.

A story that can be vouched for is told relative to the training of pilots during the war. In a certain class of students at Cape May, New Jersey, every candidate for flying honors completed the course and qualified as an aviator—with but a single exception. The particular man that did not pass was looked upon as a "freak." Surely all of these men were not born fliers.

Under present day methods, it appears as though some promising talent is lost through intensive weeding-out early in the course. Even a born flier may be stunted in his youth if he has a bad fifteen minutes when his ten hour check for solo is given.

I wish to offer a suggestion or two relative to the ten-hour check for solo. From a student's point of view it appears practicable, and in a larger sense, it is more in accordance with "Courts and Boards" procedure as conducted elsewhere in the service, than is the present system.

To begin with, a student, after finishing ten hours dual instruction, should be checked by two officers, irrespective of his rating by his own instructor, or of his rating by his first check instructor. Upon the completion of his first check hop, the check instructor should leave the plane agreeably—if noncommittally—without further word to the student. The practice of giving the student a lecture or "friendly talk" at this time serves no useful purpose in nine cases out of ten. The student's mind is not in a receptive condition, a lengthy talk produces a mental blur on the part of the student, and very likely, if the student's faults were "skids on the right turns" and "slips on left turns," he would quote his instructor the reverse a few minutes later. The check instructor, following the hop, should assign marks to the student, in taxiing, take-offs, turns, spirals, landings, etc., but he should drop this card in a box: "a secret ballot."

Twenty minutes later, the student should be taken on his second check hop, and the second check flight instructor, in complete and voluntary ignorance of what has gone before, should likewise make a secret ballot. The vote of the student's inspector, and of each check instructor should be given equal weight, and the votes should be gone over by the senior officer attached to the Flight School. One vote "to retain" should be sufficient for the student to continue the course. It is believed that this scheme would tend to do away with a very real evil. There exists in the student's mind the feeling that failure on a first check always spells defeat.

Under the present system an instructor will not tell his own student if he has recommended him for "drop." It is acknowledged to be bad for the morale of the stu-

dent. But a failure on a first check hop is most emphatically known to a student by a "thumbs down" given him by a check instructor. Immediately there is a tremendously bad effect on the morale of the student—a big handicap under which he starts his second check flight.

Again, under the present system, consider how a second check flight instructor possibly feels about a student's ability after a first recommendation to "drop." Being human, it is easier to agree with the first instructor, especially when a subsequent crack up by the student might in some mysterious way be laid at the door of No. 2 check, should he pass the student.

Instruction in flying cannot be absolutely standardized, and after a student has once soloed, further formal checks such as the above seem unnecessary.

There are other qualifications besides inherent flying ability that determine whether a candidate will pass successfully through Pensacola.

One day in the classroom at the ground school, there was a general discussion as to why so many students were failing to qualify. There were many reasons advanced and the discussion provided much entertainment. At last, the instructor asked a student how much he (the student) believed personality to be a factor in going successfully through the course. The student answered that he believed "it should have nothing to do with it." The instructor, in turn replied, "It has everything to do with it."

With that in mind, it might be well to mention that flight instructors should be chosen for their ability as instructors, their broader view of aviation and its needs, and their personality. They leave an indelible impression on the student whether he is dropped or retained. Some flight instructors have no place in the scheme of things at Pensacola, either by ability or choice. If personality makes one fly, there are many instructing, that should be wearing their wings on a much higher plane than an earthly one. Others may be "hardboiled," but are eminently fair, and are highly respected. If the best interests of aviation are to be served, all should be handpicked.

There are several features of the course that were discussed by students, that I will merely mention in passing.

1. Has the psychiatric test as now conducted in additional to the physical examination, any great value? It is all mysterious to the person being examined and what it accomplishes is by no means clear.

2. Has the practice of "thumbs up" and "thumbs down" a real place in the course? Does not the scoreboard savor a little of hostility between instructor and student?

3. The minds of some instructors seem to be overburdened with "percentages." To make this clear, I will state that before I took my first hop, I was told by "higher authority," how many spins, how many crack ups, how many serious accidents, and how many graduates there would be in the class. It would be refreshing if all parties would try the experiment of forgetting about percentages.

4. At the risk of dwelling too much on "check hops" I am going to make a comparison between two check instructors "A" and "B." I go up with "A," and from start to finish it is clear what he demands of me. I concentrate on flying and pass the check. At a later check I draw "B." From the time the plane takes off until the final taxi to the beach, there is a lack of harmony—two minds are trying to operate the plane, and flying suffers. I may feel that I flew fairly well—I find out that I didn't do what was expected of me. Students and instructors sometimes fail to speak the same language. Is the student always at fault?

5. "Manner in emergencies"—if not up to the standard, will immediately disqualify a student irrespective of brilliant airwork. This is as it should be. But nearly all emergencies may be simulated. Why not drill and drill upon this phase of flying until it becomes instinctive? Go over the same emergencies enough times to impress vividly on the student's mind what to do. It takes a year or two to train an officer of the deck to stand a good watch and be ready for emergencies; and "manner in emergencies" may become second nature if plenty of emergencies are given.

6. It is agreed that one of the most vital needs of the service is more aviators. Certain high standards have to be met at Pensacola to turn out the finished product.

Nevertheless, if the attitude toward the newcomer were, "You are welcome, and you are not going to get the boot. You are here now—we've got you, and we are going to teach you how to fly if it is humanly possible"—if that were the attitude, maybe it would be a step in the right direction.

BRONZE TABLET UNVEILED IN THE LIBRARY OF THE U. S. NAVAL ACADEMY, OCTOBER 4, 1927.

Presented by the Brazilian Navy in memory of the late Rear Admiral Carl T. Vogelgesang, U. S. Navy, former Chief of the American Naval Mission to Brazil.

Underwood and Underwood, New York

THE LATE REAR ADMIRAL CARL T. VOGELGESANG, U. S. NAVY

Former Chief of the American Naval Mission to Brazil. A bronze memorial tablet, the gift of the Brazilian Navy, was unveiled October 4, in the library of the Naval Academy, Annapolis, by the Naval Attaché to the Brazilian Embassy, Washington, Captain F. Villar. See page 1353.

PROFESSIONAL NOTES

2 October to 1 November

Compiled by

Commander F. W. Rockwell, U. S. Navy

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UNITED STATES

Flettner Rudder Tested on U.S.S. "Converse"

Christian Science Monitor, October 11.—The Flettner rudder, a regulation type device with a "fin" attached to it, was tested here recently on the destroyer *Converse* of the United States Navy. The rudder is the invention of Anton Flettner, inventor of the rotorship, and embodies a device used by German airplanes during the war, when it was found by Mr. Flettner that by adding a fin to the end of ailerons the wind resistance was lessened and the bigger piece moved by the action of the fin. The rudder sets out farther from the stern than the ordinary rudder-post, and the fin is at the end of this, acting very much as a regular rudder does.

The fin is the portion which is steered, however, and as this turns, so does the rudder itself move to right or left, the current on the main rudder being created by the turning of the fin, causing the former to follow its smaller sister.

Tests on board the *Converse* were made at speeds up to twenty-five nautical miles an hour, the vessel responding promptly to the turns given it of hard left and then hard right and also to the controls. The time in swinging the rudder was reduced to one-seventh the ordinary turning time and this gave the vessel greater possibilities for rapid maneuvering.

Panama Canal Air Plans

New York *Times,* October 1.—Balboa, Canal Zone, September 30.—One hundred airplanes will be added to the fleet of the United States Naval Air Station at Coco Solo, near the Atlantic entrance to the Panama Canal, according to a statement today by Rear Admiral W. A. Moffett, chief of the Bureau of Aëronautics, who will remain in the Isthmus for a week to investigate the projected extensions required for the accommodation of the increased air forces.

It is expected that the personnel will be increased by at least 100 pilots, who will be assigned to the air station as the additional planes are available. Several new pilots have already reached here, as more planes are being assembled at the air station.

All of the new planes for the Panama Canal base will be of the modern standardized types with which the Bureau of Aëronautics has been experimenting for years. They will include torpedo and bombing planes with twin pontoons and some fighting and pursuit craft.

At least seven new hangars, machine shops, additional runways and officers' quarters will be required for the enlargement of the station.

The annual war games here between the Army and Navy demonstrated that more airplanes are needed for the proper protection of the canal. The projects outlined are part of the five-year improvement program passed by Congress last year.

GREAT BRITAIN

British and Foreign Cruisers

The Engineer, October 14.—In the course at the recent Naval Conference at Geneva, it was stated by one of the technical delegates that the design of a capital ship often came under consideration three years before the vessel was actually laid down. It is therefore quite possible that tentative plans for the "replace" battleships which are due for commencement in 1931, are even now being discussed by the various Admiralties concerned. For the present, however, a more practical interest attaches to the design of cruisers, a type which is not yet subject to numerical limitation by international agreement, and is being actively developed by all the major navies. There are, it is true, restrictions on the size and armament of these craft. No new cruiser must exceed 10,000 tons with bunkers and feed-water tanks empty, nor must the caliber of its guns be more than eight inches. Because these limits have been almost universally adopted as the minimum in each case, a certain uniformity characterizes all the large cruisers now under construction. Never before in the history of naval construction have five countries been building simultaneously warships identical in tonnage and armament. This phenomenon is doubtless a logical corollary of the naval limitation movement, but it is deserving of notice for all that. Within the limits imposed by the Washington Treaty the naval constructor may still find scope for the exercise of his ingenuity. Unfortunately, the prevailing tendency to reticence in all that pertains to the design of warships makes it impossible to institute anything more than a superficial comparison

between the latest cruisers of the various navies. The most arresting feature of our own cruisers, i.e., the *County* class, is their relatively low speed. They are engined only for 31½ knots, while the corresponding Italian ships are designed for 34, the French and the Japanese for 33, and the American cruisers for 32½ knots. Since our naval constructors are second to none in professional skill, it goes without saying that sound reasons must exist for this deliberate acceptance of inferior speed. We know from the public utterances of Vice-Admiral Sir A. E. Chatfield and other officers of war experience that mere velocity is no longer prized as it used to be by British tacticians. They are not ready to purchase it at the cost of hitting or resisting power, and it is therefore a safe assumption that the moderate speed of the *County* cruisers is due in part to increased protection. They are known to have bulges, and this very important means of defense against torpedo attack is apparently wanting in the foreign ships.

While at first the natural impulse was to build new cruisers up to the full limit of tonnage and fighting power permitted by the Treaty, we were always of opinion that motives of economy would lead, sooner or later, to a departure from the standard 10,000-ton type. This has already happened. Of the sixteen British cruisers to be built under the program which Parliament sanctioned two years ago, nine belong to the 10,000-ton "A" class and seven to the 8,000-ton "B" class. H.M.S. *York,* the first "B" cruiser, is now under construction at Palmers' yard, Jarrow. She is, it appears, a smaller replica of the *County* type. The designed speed has not yet been disclosed, but it is known that they will carry six 8-inch guns. The arming of cruisers with guns of the heaviest caliber permissible has long been advocated in these columns. Before, and even during the war, there was a tendency in naval circles to make a fetish of the 6-inch gun for cruiser work. That this weapon has great merits, none will deny. The effective range of the latest mark is only limited by normal visibility; with a well-trained crew it can be discharged at least eight times a minute, and its 100 pound H.E. shell is extremely destructive when the target is a lightly armored or unprotected ship. Nevertheless, it is no match for the 8-inch gun, and a duel between two cruisers of the same tonage, one armed with 6-inch and the other with 8-inch guns, would inevitably end in victory for the latter if the personnel were equal in efficiency. With mechanical loading gear a very rapid fire can be maintained from the modern 8-inch gun, probably four rounds a minute per gun when the weapons are twin mounted, and the 250-pound projectile not only carries an explosive charge three times heavier than that of the 6-inch shell, but can penetrate armor of medium thickness at a considerable range. The "B" type cruisers of 8,000 tons will therefore be very formidable ships, possessing a marked tactical superiority over every 6-inch gun ship, and able, if need be, to engage even the 10,000-ton cruisers without undue risk to themselves. If this medium type of cruiser should turn out a success it will probably be adopted by other navies in preference to the larger and more expensive ship, which eventually may disappear. In the meantime there are several cruisers under construction abroad which are remarkable for their combination of speed and gun power on a moderate displacement. Of these, the two Argentine ships *Almirante Brown* and *Vinte-Cinco de Maio,* building in Italy, deserve special notice. They have a length of 542 feet, a breadth of 58 feet, and a normal displacement of 6,500 tons. The turbine machinery is of 85,000 shaft horse-power for a speed of 32 knots. The main armament consists of six 7.5-inch 50 caliber guns in twin turrets, two of which are placed forward and the third at the stern. For defense against destroyers and aircraft there are twelve 4.7-inch guns paired in turrets, three on each beam. These guns are on high-angle mountings which enable them to engage aërial targets. Six 40-millimeter automatic guns and six 21.7-inch torpedo tubes complete an armament that is most imposing for vessels of this tonnage. As they are able to stow 2,000 tons of oil, their radius of action will be large. Although designed for the requirements of the Argentine naval service, these ships seem admirably suited to act as commerce protectors, since they are powerful enought to defeat any 6-inch gun raider and large enough to keep the seas under all conditions, besides having a good turn of speed. The type, in short, has distinct advantages from the British point of view. Another interesting cruiser design comes from Germany. The first of her

post-war ships, the *Emden,* was planned on conventional lines, but the *Königsberg* and *Karlsruhe,* both launched this year, represent a radical departure from earlier practice. Like the *Emden* they conform to the limit of 6,000 tons displacement imposed by the Versailles Treaty, but there the resemblance ends. The *Emden,* it may be recalled, is 494 feet in length, with a breadth of 47¼ feet, has steam turbines of 45,000 shaft horse-power for a speed of 29 knots, and is armed with eight 5.9-inch guns—at present on single mountings, but subsequently to be mounted in pairs along the center-line—four 3.4-inch anti-aircraft guns, and eight torpedo tubes. The *Königsberg* type is 554 feet in length, with a breadth of 50 feet, and has steam turbines of 65,000 shaft horse-power for a speed of 32 knots. Diesel motors are installed for propelling the ship at cruising speed. The total endurance is 6,000 nautical miles. By adopting the three-gun turret, it has been possible to mount nine 5.9-inch guns. There is an auxiliary armament of four 3.4-inch anti-aircraft guns and twelve torpedo tubes on triple deck carriages. The ship has a square counter in which a mine-laying port is cut, and it is understood that 100 mines can be carried. It will be agreed that the armament is of unusual power in proportion to the displacement. The three triple gun turrets are arranged on a novel plan. The first stands on the forecastle, the other two being placed *en échelon* in the after-part of the ship, the second turret on the port side and the third, at a lower level, on the starboard side. The superstructure is so modeled that No. 3 turret has a large arc of fire before the beam, while the position of No. 2 enables it also to fire at a target bearing a few points off the port bow. In chase, therefore, a very slight alteration of course would bring six 5.9-inch guns onto the target. The whole design bears evident traces of having been carefully thought out, and the constructors have certainly succeeded in endowing these relatively small ships with a remarkable degree of fighting power.

Great Britain will always need numerous cruisers for the defense of the trade routes, and the smaller and cheaper these vessels are, consistent with an adequate measure of seaworthiness and fighting power, the more of them we are likely to get. As the power chiefly interested in cruisers, the British Empire has had most reason to deplore the action of the Washington Conference in fixing the standard displacement of such vessels at 10,000-tons. The British case for reducing the size and cost of cruising ships was clearly stated at Geneva, and need not be repeated here. There are unmistakable signs of a revolt against the artificial and excessive standard approved at Washington. Great Britain is already building ships which are smaller by 2,000 tons. Japan has gone further by building four cruisers of 7,100 tons—that is, nearly 3,000 tons under the Washington limit. Italy, after laying down two 10,000-ton ships, has reverted to the small scout cruiser. Even in the United States there is a growing demand in naval circles for a type of cruiser approximating to the British "C" and "D" ships, capable of acting either as cruisers proper or as destroyer flagships. We believe that we are justified in saying that American insistence at Geneva on the retention of the 10,000 ton standard was due, not to any special regard for this type, but to the idea that since Congress in any case would authorize only a few new cruisers, it was best to make those ships as large and as powerful as possible.

FRANCE

Shipbuilding Progress

Naval and Military Record, September 21, and October 12.—Rather slow progress is to be noted in the completion of new ships, mostly as the result of improvements in design. The 10,000-ton *Duguesne,* originally due to hoist the pennant in April last, is not likely to join the Fleet before next year. She is shipping her armament at Brest, and under Captain du Boucheron has had satisfactory boiler trails. Though designed for only 120,000 h.p., she will probably develop over 130,000. Her sister ship, *Tourville,* just placed under the command of Captain Abrial, will only be ready in the spring; her funnels and turrets are being got on board, and her screws of improved pattern will have been fitted by the end of the present month. These two "Washington" class cruisers will be available many months in advance of their recently launched Italian rivals *Trente* and *Trieste.* The latter, though nominally of 10,000 tons, will be vastly superior in armament to their British and French contemporaries, and their motor power (150,000 h.p.) will be nearly twice that of the British *Kents,* and give them

a speed of thirty-seven knots. French constructors, however, have had with the three *Duguay-Trouins,* a valuable preliminary experience in modern cruiser-building that is lacking on the Italian side. Of the 2,400-ton destroyers, the *Lion,* that could have been floated at Dunkirk a few months hence, is to be completed on the stocks, and to be launched ready (as was done with the *Adroit*) in August, 1928; the *Guépard* is to be launched at L'Orient in July next, and the *Bison* in August, which means slow progress. The 1,500-ton submarine *Redoutable* is shortly to be launched at Cherbourg.

The *Halbronn,* ex-German, and the largest submarine in the French Navy, measuring ninety-two meters in length and nine meters in width—thus as wide as the British X1—and with a submerged displacement of 3,000 tons, has just accomplished a two months' cruise in the Atlantic, with over eighty officers and men on board. This long radius of action (13,000 mile) croiseur-sousmarin was constructed at Kiel in 1918, and intended for long-distant pirate work. She carries a 6-inch gun, and has received several modifications at French hands to the great benefit of her stability and diving powers. It was in January last proposed to discard her to save the high cost of her upkeep. A special submarine committee, after a thorough investigation of her capabilities and condition, decided otherwise, and she is being used as a training vessel for those officers who are to be called upon to command the new 1,500-1,900-ton sousmarins de grande patrouville of the *Redoutable* class, that have the same length as the *Halbronn,* thirteen of which are now building and sixteen projected (1927-29). The first of that important series, the *Redoutable,* that was laid down at Cherbourg in July, 1925, in the presence of President Doumergue, is practically ready, and will in a few weeks' time undergo her trials, that are being awaited with impatience, on account of the various innovations that are embodied in that numerous class. Her sister ship *Vengeur* is not quite so advanced. Eleven similar boats, four of which are in the St. Nazaire-Nantes center, are in the early stage of construction, and will be pressed forward as soon as the prototype's sea tests have been concluded. The *Redoutable* type, designed for sea-keeping power and speed endurance, is somewhat similar to the British *Oberon* class, that is slightly smaller. Such dimensions most French specialists would like not to be exceeded; the radius of action of over 9,000 miles and the ammunition supply (torpedoes, mines, and shells) are considered sufficient for colonial defence. The four first units of the *Sirène* class (600-770 tons), on the conclusion of successful endurance tests in the Atlantic, have been attached to the Toulon battle squadron and formed the Sixième escadrille nucleus.

British aërial achievements and especially the wonderful strides accomplished by the powerful and comprehensive German organization, are impelling French naval aviation to renewed efforts with a view to making up for lost time. Good work is being done in the porte-avions Béarn, under Commandant de La Borde, as well as in the growing Bizerta center. Regular commercial communications are being organized to Tunisia, Algeria, and Morocco.

JAPAN

Air Forces Used in Maneuvers

New York *Times,* October 27.—Tokio, October 26—Exceptional interest was attached to the grand biennial maneuvers that the Japanese Navy has just concluded owing to the opportunity that they afforded for testing the value of air reconnaissance on a large scale.

As usual, both the problem set and the results achieved are kept secret, but the defenders evidently benefited by aircraft, as the final battle occurred three days before the allotted time and some hundred miles further from Tokio than was expected.

The 170 ships participating were divided into a Red Fleet, defending Tokio, and a Blue Fleet, attacking from the direction of Formosa. The first stage consisted of local exercises in which aërial attack and defense, especially the darkening of towns, was to be practiced.

The Emperor joined the fleet for the second part.

The Red Fleet concentrated on October 19 to defend the main island, and the Blues left Tokuyama the next day, reappearing as an enemy fleet from the Pacific. Preparations had been made for smoke screens in Tokio Bay and an elaborate darkening of towns by volunteer assistants, but these remain untested, as the battle fleets met 200

miles southwest of Kii on October 24 and the maneuvers were thereupon ended, the results having been attained.

The weather was so rough that Pacific liners were twenty-four hours late. One seaman was killed in the heavy seas and one airplane was lost.

Japan and Sea Communications

Naval and Military Record, October 5.—A recent article by Baron Sakamoto on the subject of the vital importance to Japan of control of the Western Pacific merits very much more attention than it appears to have attracted. The point was scarcely touched upon during the recent Three-Power Conference at Geneva, possibly because of the shrewd anticipation that it might ruffle American susceptibilities. Baron Sakamoto has a dual qualification for dealing with the subject; first, a professional one, as having been a rear-admiral in the Imperial Japanese Navy; secondly, a political one, as having served on the staff of the Japanese delegation to The Hague and London Conferences. He realizes that "once the emergency comes" the important lines of communication around Taiwan and to the west coast of Chosen will at once be seriously menaced by hostile submarines. The present annual shortage of rice (the staple foodstuff) is 700,000 tons, and steadily increasing iron and fuel for war purposes Japan conspicuously lacks. Therefore, she is absolutely dependent upon maintaining an overseas flow of supplies. Manchuria and Mongolia are her great reservoirs. From these countries she can get all she would need during a prolonged struggle, so long as she was able to maintain an adequate flow of transport. The South Manchuria railroad is already under Japanese control, and could pour supplies into Fussan and Genjan, which she would seek to get across to her northern ports.

Her first strategical move would be to try and close the Tsugarn and Soya Straits, and so convert the Sea of Japan into her own "pond." Upon her ability to accomplish this effectively largely depends the practicability of her aim to establish her control of the Western Pacific. From Tsugarn to Osaka is about 900 miles, a rather lengthy line to guard. Of course, she would be operating to the fullest strategical advantage, inasmuch as her naval forces would work directly from their home bases, whereas hostile forces would have long distances to cover either in attempting direct action or any sort of blockading tactics.

Military operations on a grand scale in Manchuria or Mongolia might strike at the sources of supplies. But here again, as she demonstrated in her war with Russia, Japan is at a great initial advantage. Indeed, owing to her remoteness from any enemy which could conceivably dispute the mastery of the Western Pacific with her, there seems every reasonable prospect that she could establish and maintain that mastery over a sufficiently wide zone to answer her purpose. And all her naval policy is directed to this objective in the event of war.

AVIATION

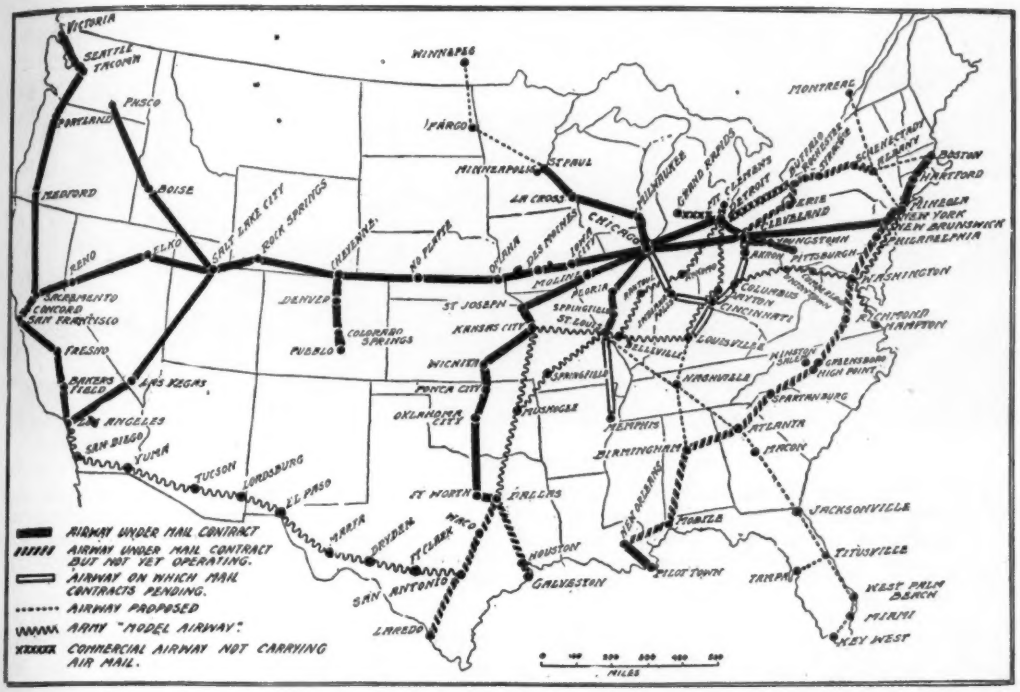
Motor Hum Controls Air Field Lighting

New York *Times,* October 27.—No longer will it be necessary to keep airplane landing fields brilliantly lighted all night when a new invention, recently demonstrated, is perfected to the point of being manufactured in quantity. The noise made by the hum of an airplane 1,000 feet in the air closed the switch that lighted a bank of flood lights at a Pennsylvania aviation field in the first demonstration of the sound-sensitive automatic lighting apparatus developed by an electrical research engineer.

An air pilot completed the experiment by bringing the plane to the ground in the glare of powerful lights turned on by the steady throb of the airplane's motors. The device uses the drone of the airplane to control electric energy. From a tiny current at first, this controlled energy is increased in power by amplifiers until it is strong enough to throw a good-sized lighting switch.

A loud-speaker operated reversely is the "ear" of the mechanism. Laid on its back, it gives the apparatus a directive effect with reference to noises from above. A microphone completes the auditory section. Passing through several amplifiers, the impulse then passes through the time-limit relay, the last step before the current automatically throws the lighting switch. The switch locks automatically and the lights remain on until the switch is thrown by a field attendant.

Another thousand miles will be added to the system of lighted airways in the United



Map prepared as of August 20, 1927, from material furnished through the courtesy of the Department of Commerce, aeronautics branch. *Christian Science Monitor, October 5*

AIRWAYS OF THE UNITED STATES

The present air network in the United States, as shown above, comprises 24 mail airways in operation or under contract for mail operation before the end of 1927, in addition to the Army "Model Airway," airways proposed and commercial airways not carrying mail. The 24 mail contract routes cover 11,170 miles; furnish air service to 65,677,209 people within the trading areas, and include 75 station stops. The longest single route is the Chicago-San Francisco, of 1894 miles.

Express as well as mail now is being carried over 4686 miles of the above network, on an arrangement between contractors and the American Railway Express Company. This service is available over the Boston-New York route, the Transcontinental "trunk line," i.e., New York-Chicago and Chicago-San Francisco, also Chicago-Fort Worth-Dallas and Salt Lake City-Los Angeles. Passenger service is offered by routes which cover nearly 6000 miles of the network, including the Transcontinental.

The Army "Model Airway," shown on the map, is the oldest and the first long-distance passenger line in the United States. Established in 1922, it stretches across 4384 miles, serving Air Corps activities in 35 cities. It is used for cross-country training, also for transfer of personnel and urgent material from post to post. A million miles have been flown over this route with but one fatality.

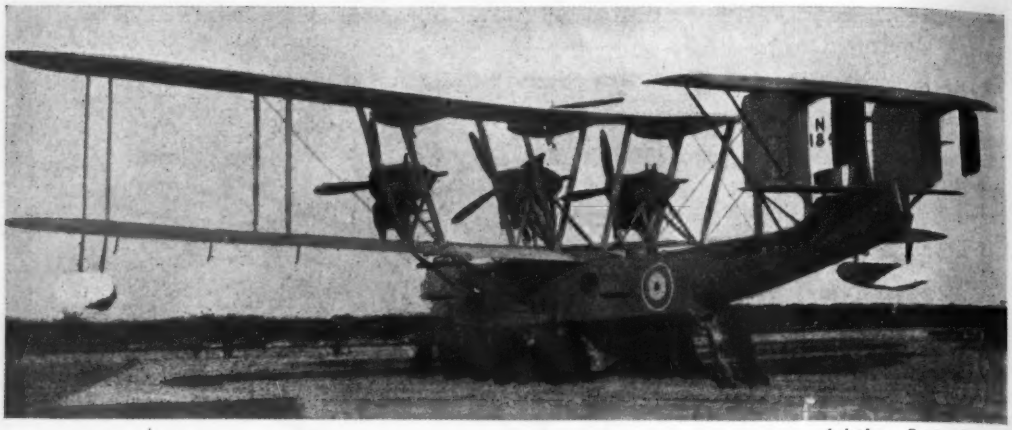
States when engineers for National Air Transport complete the installation of the last aërial beacon on the Chicago-Kansas City-Dallas air mail, express and passenger route, Colonel Paul Henderson, general manager of the company, recently announced. The National Air Transport is doing the construction work for the government under contract.

When the current is turned on there will be 3,041 miles of lighted airways in this country under the control of the Department of Commerce. The transcontinental airway is 2,665 miles long, 2,401 miles of which are now lighted. The Dallas line is the principal feeder route.

At present the mail, express and passenger planes of National Air Transport, the operating company, are flying the Chicago-Dallas route by day, but a night schedule is contemplated when the lighting is completed and when the air-mail routes from Dallas to Galveston and San Antonio begin operations.

New British Torpedo Plane

Naval and Military Record, October 12. —Tests are now being carried out by Air



Aviation, September 19

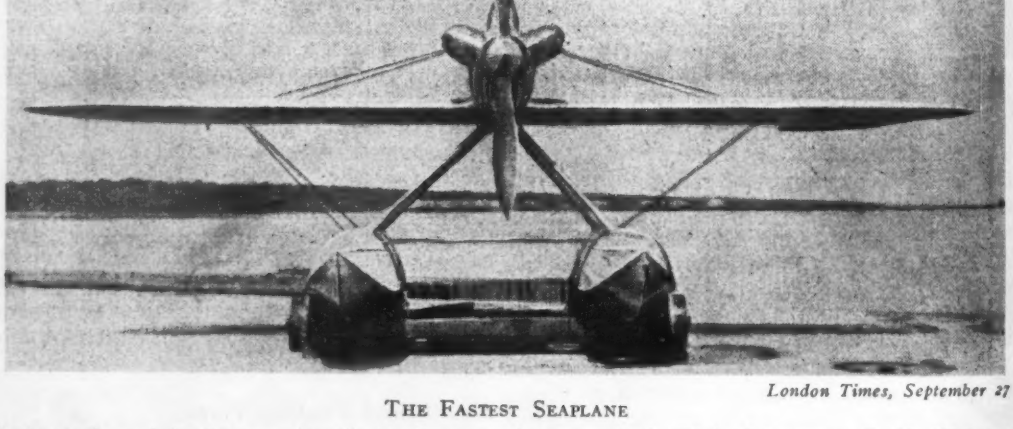
WORLD'S LARGEST FLYING BOAT

A photo of the *Iris II*, described as the largest flying boat in the world, which has been built for the British Air Ministry by the Blackburn Aëroplane Co., Brough, England. It emerged successfully from the trial through which a detachment of the R.A.F. men from Felixstowe put her recently. Designed by Major Rennie, the boat has three Rolls-Royce Condor engines developing 2,100 h.p., and will carry three tons of gasoline, enough for a non-stop flight to India.

Ministry pilots on a big Hawker Rolls-Royce bombing plane, which has been equipped to carry a full-sized torpedo.

The weight-lifting capabilities of the Hawker Rolls-Royce planes were demonstrated during Flight-Lieutenant Carr's attempt to fly non-stop to India, when the machine lifted nearly three and one-half tons of petrol and proved the possibility of carrying a full-sized torpedo. This new torpedo plane has a speed of 125 miles an hour at ground level.

The Hawker Rolls-Royce was built as a high-altitude bomber, and can climb to a height of 20,000 feet or nearly four miles above ground level. At this height it appears so small as to be practically invisible, and can travel at 100 miles an hour.



London Times, September 27

THE FASTEST SEAPLANE

A front view of the Supermarine-Napier *S-5* monoplane on which Flight Lieutenant S. N. Webster won the Schneider Cup for Great Britain yesterday. The speed, 281.49 m.p.h., is a "record" for any aircraft.

Flies 322 Miles an Hour

Baltimore *Sun*, November 7.—Mitchel Field, New York, November 6.—An unofficial world's speed record for land planes was claimed today for Lieutenant Alford J. Williams, U.S.N., when he announced he had attained a speed of 322.6 miles an hour during the first test today of his ship since its recent conversion from a seaplane.

The present official world's record of 278 miles an hour for land planes was established in France in 1925 by Warrant Officer Bonnett, of the French Army. Yesterday it was announced in Italy that Major Mario de Bernardi, Italian flying ace, had attained an official speed of 315.42 miles an hour in a hydroairplane.

New York Weather Bureau officials said that when the flight was being made the wind velocity was forty miles an hour. Williams announced he expected to make an official flight later in the week in an effort to establish a new world's record for land planes.

RADIO

International Radio

Time, October 17.—The undebatable necessity for uniform rules of international communications brought 400 representatives of fifty-one nations to Washington last week for an international radio telegraph conference. The only previous meeting of like purpose was at London in 1912, when only dots and dashes could be telegraphed without wires. Rules devised at that time still control wireless methods that have transmitted 1,000 words a minute and can transmit 2,000 a minute; that can be directed over a wave beam to specific receivers; that carry sounds and sights (wireless telephone, telephotography and experimentally, television).

Because of these recent developments in wireless communication, Secretary of Commerce Herbert C. Hoover recommended to the conference that it name itself International Radio Conference or Convention of International Radio Communication. Decisions on that point and a multitude of others* were to occupy the conference until mid-November.

New Amplifier Tube

New York *Times*, October 9.—A new receiving tube labeled UX-222, known as a four element tube, because it has a filament, plate and two grids, has been introduced by the Radio Corporation of America. The tube is designed for use as a radio frequency amplifier in dry battery operated circuits, and according to radio engineers it is a tube of great promise in the experimental and development field.

The standard tube has but one grid. The new amplifier has two grids placed concentrically with each other and with the filament element. This arrangement constitutes a distinct departure from the conventional radio tube construction. The "control grid" element, which corresponds to the "regular" grid in receiving tubes of the type now in general use, is connected to a terminal cemented to the top of the glass envelope. The other grid element is known as the "screen grid," and is attached to the terminal in the standard base in the conventional manner.

Dr. Alfred N. Goldsmith, chief broadcast engineer, commenting on the several applications of the new device, said, "The four-element tube, which is still in the experimental stage, has been designed primarily for high voltage amplification in radio frequency circuits. It has several distinct applications, two of which are as follows: first, when the 'regular' grid is connected to the coupling or tuning coil and the proper 'C' and 'B' voltages applied, the tube becomes automatically neutralized, preventing what is known as 'feed-back,' of the unstabilizing influence found in conventional tube application. With the unbalancing influence thus removed, the receiver becomes very stable. Construction and operation are simplified. Thus the customary howls often caused by self-oscillation are entirely avoided.

"The second application in radio frequency circuits is made with a reversal of the grid connections," he added. "When so used it is known as a 'space-charge-grid' tube. Its use in this manner affords a very high voltage amplification or effective signal gain, the amount of which depends upon the coils with which it is used and various other details. In each application the tube

* As, special radio codes, word counting, tariffs, wave allotments.

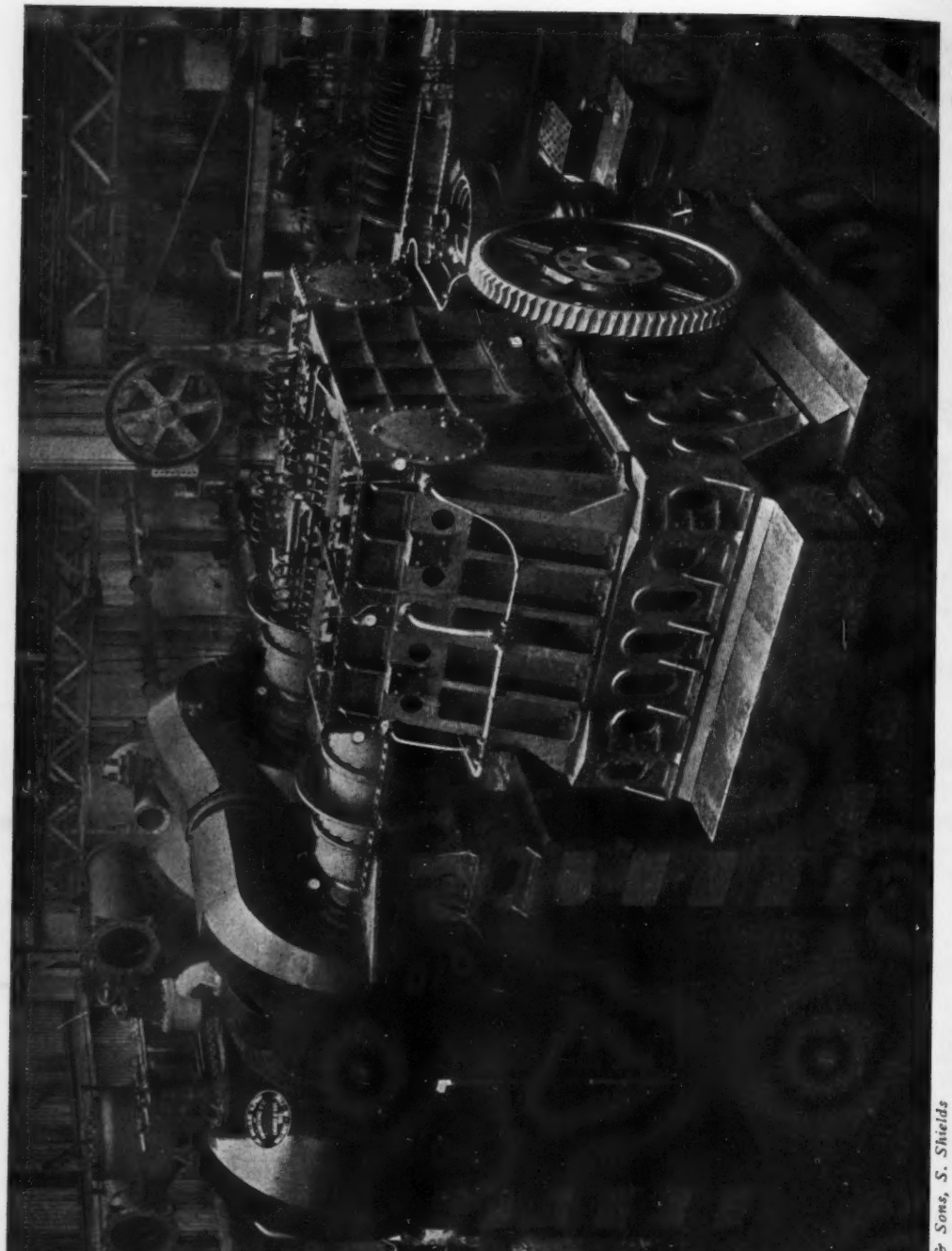


Photo by W. Parry & Sons, S. Shields

ONE SET OF TURBINES OF H.M.S. "NELSON," COMPLETE WITH CASINGS AND LAGGINGS, REDUCTION GEAR AND TURNING GEAR

must be entirely shielded by a metal jacket, with the 'regular' or control grid passing out through a small hole in the top of the shield. Other provisions are that the control grid and plate wires from the tube be kept well separated. The metal shield must also be connected to either the positive or negative 'A' battery binding post on the tube socket."

MERCHANT MARINE

Construction of Motorships exceeds All Other Types

The Nautical Gazette, October 15.—Motor vessel construction is again a feature of Lloyd's returns, a gain of about 130,000 gross tons being shown by the new figures, following the very sharp advance of almost 300,000 tons in the quarter ended June 30. Over 700,000 tons more of ships equipped with internal combustion engines are now in hand than there were at this time last year, when the total for all countries, being constructed, was 869,000 tons.

During the quarter just ended, Germany's motorships on order showed an increase of 58,000 tons, compared with one of 25,000 tons for Great Britain and Ireland, and of about 45,000 tons for the other maritime nations. The comparison between the last two quarters is shown in the following table of gross tonnage:

	Sept. 30, '27	Sept. 30, '26
Great Britain and Ireland	653,342	627,700
Germany	239,844	181,295
Other Countries	696,324	650,600
World Total	1,589,510	1,459,595

More than half of the present shipbuilding of the world is being devoted to motor vessels, the total of 1,589,000, comparing with that of 1,485,000 gross tons for all other types of vessels combined. Of the present motorship construction, forty-one per cent is now being done in the yards of Great Britain and Ireland; fifteen per cent in Germany, and forty-four per cent by the other shipbuilding countries taken together.

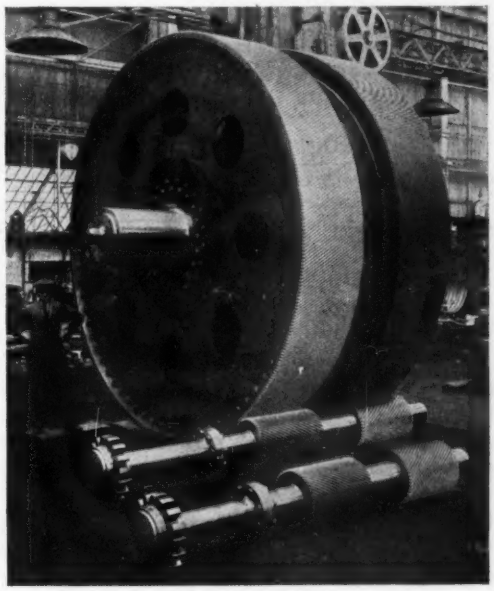
Contrasting the shipbuilding situation in the various maritime nations as compared with a year ago, Lloyd's Register points out that Germany has quadrupled its work in hand, and England almost doubled its September, 1926, figure. A number of other changes are shown in the following comparative table covering the two periods, the figures representing gross tonnage:

	Sept. 30, '27	Sept. 30, '26
Great Britain and Ireland	1,536,416	774,797
Germany	516,245	127,321
Italy	208,420	278,764
Holland	163,824	160,604
France	130,914	134,985
Denmark	96,150	41,923
United States	91,070	119,723
Sweden	82,000	45,157
Russia	80,500	48,920

ENGINEERING

Machinery of H.M.S. "Nelson"

The Marine Engineer and Motorship Builder, October, 1927.—We publish on this and succeeding pages illustrations of machinery of H.M.S. *Nelson,* by kind permission of the Admiralty. The *Nelson,* which was built by Sir W. G. Armstrong, Whitworth and Company, Ltd., at their naval works on the Tyne, and engined by the Wallsend Slipway and Engineering Company, Ltd., and the *Rodney,* built and engined by Cammell Laird and Company, Ltd., are the largest capital ships so far completed, and they will probably represent the last word for several years to come in battleship design. The machinery for both vessels was designed under the direction of Sir Robert Dixon, K.C.B., the engineer-in-chief of the Fleet, in conjunction with Mr.



A Gear Wheel and Pinions

One Set of Turbines of H.M.S. "Nelson," Complete With Casings and Laggings, Reduction Gear and Turning Gear

Andrew Laing, C.B.E., the general manager and director of the Wallsend Slipway and Engineering Company.

The two lines of propellor shafting are each driven by a complete set of turbines, through a single-reduction gearing. At either side of the vessel there is one high-pressure and one low pressure ahead turbine working in series, while incorporated with the low-pressure turbine is an astern turbine.

Preference was given to the impulse type of turbine for these vessels, both the high- and low-pressure turbines being constituted entirely of wheel stages and intervening diaphragms provided with guide vanes.

The following are the leading particulars of these new battleships:

Length	660 feet
Breadth	106 feet
Mean draught at standard displacement	30 feet
Standard displacement	35,000 tons
Estimated horse-power on full power trial	45,000
Corresponding speed	23 knots
Total oil fuel capacity	4,000 tons
Armament, not including machine guns or torpedoes: nine 16-inch guns in triple mountings; twelve 6-inch guns in twin mountings; six 4.7-inch A.A. guns; four 3-pr. guns; eight 2-pr. pom-poms.	
Total Estimated Cost	£6,500,000

Economy of fuel consumption at low or cruising powers being of paramount importance, this object has been attained by adding variable initial stages in the high-pressure turbines.

The various groups of nozzles are controlled by means of ordinary shut-off valves, while the number of wheel stages in use is controlled by interstage valves, these being operated by means of gearing. Those parts of the turbine casings which are exposed to the effects of super-heated steam are made of cast steel, while the diaphragms are also of steel. The blading throughout is of phosphor bronze.

The thrust from the propellers is taken by the Mitchell arrangement, the thrust collar of which is 47½ inches in diameter. Patent thrust-measuring apparatus is also fittted to each thrust block.

The propellers of solid bronze were supplied by J. Stone and Company, Ltd.

The main condensers are of the Weir's Uniflux type, with internal arrangements as usually adopted for Admiralty vessels. The air pumps, four in number, each having two pump barrels, are of G. and J. Weir's "Paragon" type. The feed heaters, together with the feed pumps and lubricating pumps, have also been supplied by G. and J. Weir. Auxiliary condensers, of which there are two, are of the Weir Uniflux design.

The steering gear, which is of the electro-hydraulic type, has been supplied by Brown Brothers and Company, Ltd., Edinburgh. The turning motors and winches were supplied by Laurence Scott and Company, Ltd.

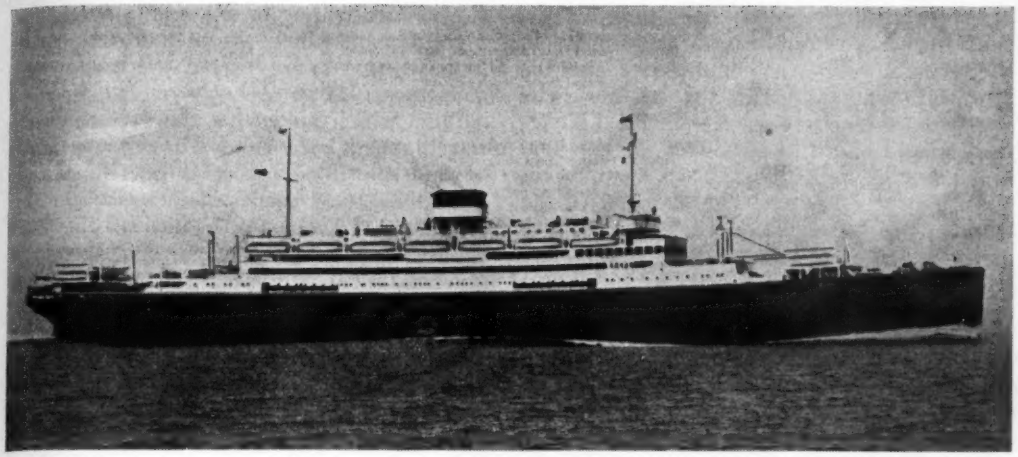
There are eight boilers of the three-drum small-tube type of the usual design as adopted for naval work. They are arranged for burning oil fuel only under the closed strokehold system of forced draught. To each boiler superheaters are fitted. The uptakes from all the boilers are grouped and led up into one large funnel.

The trial tests were completely satisfactory, the speed of twenty-three knots being considerably exceeded, while the curve of water consumption for all purposes showed a remarkable uniformity over a wide range of engine powers and ship speeds.

The Motor Liner "Saturnia"

Engineering, October 7.—By the completion of the *Saturnia,* which left Trieste on her maiden voyage on September 21, the possession of the world's largest motor vessel passes to Italy. The *Saturnia* has a gross tonnage of 23,900, against 22,500 tons for the *Asturias,* placed in service early in the year, and 20,000 tons for the *Carnarvon Castle,* which was completed a little later. The *Saturnia* has been built to the order of the Cosulich Linie, of Trieste, by the Cantiere Navale Triestino, Monfalcone, and will be employed for the South American express passenger service, between Trieste and Buenos Aires, calling at Naples, Marseilles and Rio Janeiro.

The vessel, which is illustrated herein, has an overall length of 631 feet, a breadth of 79 feet 6 inches, and a depth to the main deck of 46 feet 6 inches. The load draught is 29 feet, the service speed 19 knots, and the ship's personnel numbers 441. She has accommodations for 279 first-class, 257 second-class, 309 intermediate, and 1,352 third-class passengers. The vessel has eight decks, and the main sub-division is effected by ten transverse water-tight bulkheads, which extend vertically to the fifth deck



VESSEL ON TRIAL RUN

with the exception of the foremost, which extends to the fourth deck, and bulkhead number five, which extends to the sixth deck.

There are three cargo holds forward and three aft, the intervening space being occupied by the main and auxiliary engine rooms and the swimming pool. The cellular double bottom extends for the full length of the ship. It is utilized for the carriage of fresh water to the amount of 2,500 tons. Two of the forward holds are insulated for the carriage of frozen and chilled cargoes. The cargo spaces are served by six hatchways with trunks through the upper decks. The passenger accommodation includes a lounge, 43 feet by 33 feet, a social hall, 63 feet, by 46 feet, library, smoke room, and so on. The whole of the deck house is surrounded by a large teak-covered promenade 16 feet broad. Both the first and lower class accommodation are in keeping with the standard of modern ocean-going vessels. The structural arrangements and scantlings are throughout in conformity with the requirements of the Registro Italiano and with Lloyd's Register of Shipping.

The main propelling machinery, which was built by the Fabbrica Macchine San Andrea, S.A., a concern of the Stabilimento Tecnico Triestino, consists of two eight-cylinder Burmeister and Wain double-acting Diesel engines operating on the four-stroke cycle, each engine developing 10,000 brake horsepower at 125 r.p.m. The diameter of the cylinders is 840 millimeters (33 1/16 inches) and the piston stroke is 1,500 millimeters (58 13/16 inches). The engines are of the closed type, and are generally similar to earlier engines of Burmeister and Wain type, several of which have been previously described in our columns. Forced lubrication is employed for all bearings, the lubricating oil being also employed for cooling the pistons. The cylinder heads and valves are water cooled. The bedplate is of cast iron, and is divided up into compartments by webs carrying the main bearings. The cylinders are mounted on a box casting, or entablature, in which the lower cylinder covers are carried, and the same type of construction is employed for the cylinder heads. The cylinders are divided into two groups of four, and, between the groups, a special frame is introduced carrying the various controls, of which the mechanism is enclosed and lubricated under pressure. Separate camshafts are employed for the upper and lower valves, both camshafts being driven from the crankshaft through steel gearing. The engine is reversed by sliding the camshafts, a compressed air servo-motor being employed for this purpose. The oil pump is in two parts, each part being provided with four plungers so that every cylinder has an independent supply.

Among the auxiliaries may be mentioned three generating sets and three compressors, all Diesel driven. Two of the generating sets are driven by six-cylinder Burmeister and Wain engines, while the third is driven by a three-cylinder engine of the same type. All three engines are of the closed type,

with forced lubrication, operating on the four-stroke cycle, and are direct coupled to the generators. The compressors for the sets form one unit with the engine. The six-cylinder sets are of 1,350 brake horsepower, and the three-cylinder set of 650 brake horsepower, the ingines running at 195 r.p.m. in all cases. The diameter of the cylinders is 550 millimeters ($21\frac{5}{8}$ inches) and the piston stroke is 900 millimeters ($35\frac{1}{16}$ inches) for both the six- and three-cylinder engines.

The compressor engines are four-cylinder Diesel units, also of Burmeister and Wain type, the bore and stroke being the same as that of the engines for the generator sets referred to above. Each engine is built up in one unit with a three-stage twin-cylinder compressor, as shown in the illustration. The engines develop 900 brake horse-power at 175 r.p.m., and there is one set for each main engine, the third set being used as a standby.

We understand that the main engines each developed 13,000 brake horse-power on the test bed, and that the vessel, which, as previously stated, has a designed speed of 19 knots, reached a speed of twenty-one knots on her trials. Since 1920 the Fabbrica Macchine San Andrea, S.A. have built Diesel engines totalling 200,000 brake horsepower with Italian materials and labor, and have at present in hand the eingines for the *Vulcania,* sister ship to the *Saturnia,* and about fourteen other large vessels.

MISCELLANEOUS

The Size of Warships

Naval and Military Record, September 28.—Reverting to the article upon "The Size of Warships," which recently appeared in this journal, we have season to believe that the whole subject is engaging the attention of the Admiralty to a much greater degree than the public has any knowledge of. The position is a very favorable one for taking stock. So far as battleship construction is concerned, the Naval Powers are pledged to a holiday until 1933. So far as cruisers are concerned they are correspondingly pledged not to build ships beyond 10,000 tons. When the time comes to review the Washington Agreement the question of revising these limitations of size will be the first to claim attention, assuming of course, that the signatory Powers are willing to extend the agreement, a point upon which as yet there is no data to base speculation. That there is in this country a large school of professional opinion which holds that the growth of the warship had been carried much too far is beyond question, and it is not improbable that this view may find articulate expression. To our mind, one of the most significant symptoms of the extent of this reactionary feeling was the proposal put forward by the First Lord of the Admiralty during the Three-Power Conference that all future battleship construction should be limited to a maximum of 25,000 tons, coupled with the emphatic predilection of the British delegation for smaller cruisers.

The real difficulty lies in the elimination of the primary cause of growth in the warship, namely, competition. This can only be done by an extension of the Washington principle, and, if this proves feasible, the question is, how far can that extension be carried? Here we must be prepared for a sharp conflict of opinions. What in a somewhat sketchy way is called the material school will resist any reduction that may minimize the mechanical factors of their own particular branch. The gunners will not willingly consent to any diminution in either the number or size of their weapons; the torpedoists will not readily agree to a reduction in the number of torpedo tubes; the engineers will not take kindly to any cutting-down of speed and fuel endurance; the signal branch will not yield any of their wireless or searchlights—and so it will go on. Taken collectively, these arguments will amount to a logical demonstration of the impracticability of reducing the modern ship of war at all.

But the other school, which declines to be impressed by the votaries of this biggest of everything, argues that we must get back to earlier principles. By international agreement this would be perfectly simple, but as to how far we might attempt such a reversion in defiance of international agreement is quite another matter. It is probably true to say that if the present posture of world affairs endures for another six years, the occasion will be quite favorable to such a step. We rule the United States out of any competitive calculations, and therefore do not speculate upon what she may do or may not do. Japan would be more than likely to follow such a lead as we might

give for the very same reasons that prompted us to give it. France and Italy we do not contemplate in terms of active rivalry, and, as far as portents go, it seems very improbable that either will resume capital ship construction—at any rate, on existent lines—when the Washington Agreement expires. So that, presuming the course of political events to justify this line of contention, it comes to this: in taking a definite line of our own with regard to the size of our future warships, we should be chancing the opportunity given to the United States and to Japan to steal a march upon us, and to France and Italy to somewhat reduce the very wide difference between their sea power and our own.

It is true that during the course of the Geneva Conference, Mr. Hugh Gibson announced that America might want to build battleships bigger than 35,000 tons "if the technical experts so advised." Let her do so by all means. If our technical experts had ruled the roost we should now have battleships of 50,000 tons in the Fleet and in all probability plans approved for vessels of 60,000 tons. There is no limitation to the possibilities of growth under the stimulus of unreasoning competition. The armament manufacturer will undertake to build you a 20-inch gun, throwing a shell of 3,000 pounds. The armor manufacturer will undertake to roll you plates to keep out that shell at five miles. The engineer will undertake to furnish you with machinery to drive the biggest ship ever yet designed at forty knots. When the distracted naval designer is called upon to embody all these joys of the specialists in one hull, he finds that he cannot possibly do it on less displacement than 70,000 tons!

And what is the use of it all when done? The hyper-super-fighting ship is nothing more than a monstrous, extra-vagant freak. Her colossal surplus power is of no practical value, because she either cannot use it , or it is not necessary to achieve its purpose. If contending Powers would consent to settle their disputes by a tourney of champions, then the mighty engine might be justified. But war does not run upon these lines. The modern battleship appears to be relegated by changed conditions to the function of holding the arena for the lesser craft, a task in the course of which she may never come into action at all. Therefore, surely it is but a matter of common sense to employ as small a type of ship as shall be adequate to this rôle. In 1900 we thought 15,000 tons was quite big enough. By 1914 we had advanced to 27,500 tons, due in part to the attempt to compromise the armament of the battleship with the speed of the battle-cruiser. This leap forward, of course, was entirely owing to our policy of "going one better" than the Germans. But we took very much greater jumps than they did, nor do we think we can claim with any relative advantage.

The present tendency is not to contemplate the biggest possible ship with the greatest conceivable amount of smashing power, but the smallest ship which will fulfil the specific conditions of her rôle in naval warfare. Any primary type of warship must be able to fight up to the full range of practicable visibility. But she does not want to be armed for fighting considerably beyond this. Range of artillery is not dependent upon calibers. In pre-*Dreadnought* days all the naval Powers considered four heavy guns quite sufficient for a battleship. Now we mount nine. No doubt salvo firing is the most effective form of shooting, and the more weapons a battleship can bring to bear upon her target, the sooner should she demolish it. But if this argument be correct, then surely the *Canada,* with her fourteen 12-inch guns, was a more formidable opponent than the *Queen Elizabeth* with her eight 15-inch guns. The artillerists do not seem to trouble themselves about the limitations of visibility. All they want is the still bigger gun. Yet is it not the fact that when the Germans could not hit our ships at Jutland with their 12-inch weapons, we could not hit them with our heavier ordnance for the simple reason that neither could any longer see the other?

The Aircraft Carrier

Naval and Military Record, October 12.—Arising out of the debates during the recent Geneva Conference is the question whether the presumptive value of the aircraft-carrier is not placed much too high. This is tantamount, of course, to asking whether the aircraft is really so indispensable as a fleet auxiliary as the existence of the aircraft-carrier implies. Probably the instinctive tendency will be to wonder how such a question can be raised at all, since the value of the aircraft seems so self-evident. But

are things really always what they seem? The two chief functions of the Fleet Air Arm are defined broadly as reconnoitering and spotting. The reconnaissance of flights will go forth to seek the enemy when there is reason to believe that he may be in the vicinity. Aërial observation proved of great service to the armies in France. But photographs of static positions, which can be microscopically examined at leisure are one thing; hunting for a mobile foe and gathering and transmitting intelligence of his strength and movements is quite another proposition.

The tendency to question whether air warfare is likely to become an integral feature of sea warfare is certainly manifesting itself today. Reconnaissance, to prove of the fullest tactical value, must gain touch at long distances, maintain touch and be able to transmit observations. In low visibility the aircraft is bound to come under intensive fire whilst trying to take stock, and smoke is going to add enormously to her difficulties. Her occupants may see much that is of first-rate importance, but how are they going to get it back to their fleet? To say that in this respect the aircraft is at no greater disadvantage than the reconnaissance cruiser is scarcely correct, for in addition to wireless—a bad medium in action—the cruiser possesses the means of visual signalling by flags and searchlight. The idea that observing aircraft may fly back and drop messages over the flagship only illustrates the very limited scope for dealing with this problem. Reconnaissance demands continuous touch once contact is established. How many aircraft would be necessary to ensure this under a system of processional coming and going between the enemy and their own flagship?

These points should not be treated didactically, but as raising considerations for serious discussion. The aircraft-carrier is generally held to embody all the means for reconnaissance before action and during action, and for spotting in long-range firing. But may it not well be that the enthusiasts have gone too far and too fast, carrying with them those who merely rest their judgment on what the enthusiasts claim? It may be also that those who decline to be carried away by the enthusiasts are too conservative in their views. We have heard very senior officers express the conviction that aërial reconnaissance is going to prove a great disillusionment when it comes to the test; that past campaigns have been fought without it, and that future fighting will manage to do without it. Whether this in its turn is not rather a dangerous fallacy is a serious question. If one side had aircraft observing and the other side had none, either to try and deny them the opportunities of learning what they wanted to know or of making their own observations, the side which was without such equipment might find itself at a grave disadvantage.

We say "might" find itself at a grave disadvantage, because the real point is as to whether its cruisers might not be able to do all that was necessary in the way of reconnoitering. Admittedly they would have nothing approaching the range of vision and the mobility of the aircraft. But as against this they possess much more effective means of communication and a better ability for keeping in touch with the enemy once sighted. Much would naturally depend upon atmospheric conditions. In exceptionally clear weather aircraft would sight a hostile force long before it could possibly be visible to a warship. If an admiral did not know that such a force was anywhere near him, the mere news that it had been sighted, even without any further information as to strength and dispositions would prove of the utmost importance to him. But it seems reasonable to ask whether in such circumstances aircraft would be reconnoitering at all? If an admiral did not know a hostile force was anywhere near him would airplanes be up looking out for it?

Ten 20,000 Ton, Thirty-five-Knot Liners Proposed

The Nautical Gazette, October 22.—Notwithstanding a good deal of cold water thrown upon the scheme, plans for a daily service to Europe with high speed ships making the crossing in four days are being pushed ahead. It is proposed to run ten 20,000-ton passenger vessels in this service to run between either New London, Connecticut, or Montauk Point, Long Island, New York, to Havre under the control of the New York, London and Paris Steamship Company, to be known as the "Blue Ribbon Line." It is reported that tests in the naval basin at Washington demonstrated a speed of thirty-five knots under normal Atlantic conditions.

The new line is to be organized by Mr. Laurence R. Wilder, former president of the American Brown-Boveri Electric Corporation and now chairman of the advisory committee of that company's shipbuilding division; Mr. H. B. Walker, president of the American Steamship Owners' Association, former head of the Old Dominion Line and Mr. C. L. Bardo, former vice-president and general manager of the New Haven Railroad, now associated with the American Brown-Boveri Company. The proposed new ships have been designed by Mr. Ernest H. Rigg, naval architect of the New York Shipbuilding Company of Camden, New Jersey, subsidiary of the American Brown-Boveri Electric Corporation, and Mr. Theodore E. Ferris, consulting naval architect of New York. The promoters of the project express confidence that a sufficient number of travelers will be found willing to pay for such high-speed service and make the operation of daily sailings profitable.

The vessels are to be approximately 800 feet long with an eighty-foot beam and a draft of twenty-four feet nine inches. All of the available space in these liners will be utilized for passenger and crew quarters, baggage, engines and boilers. It is also planned to carry American, French and British customs officers on board to avoid delay for baggage inspection at each end of the line. The new line is expected to be in operation early in 1930.

Mr. Laurence R. Wilder discussing the project remarked that all changes in the history of transportation have been based on improved speed linked with comfort and reliability. This, he asserted was the basis of the success of the famous clipper ships prior to the seventies. "Now" he said, "with our highly developed industrial structure, our necessity for finding markets for our manufactured goods and our position as the world's banker, we can no longer look to our internal development alone, but must again seek international trade. To do this we require an adequate merchant marine capable of standing on its own bottom in world's competition and capable of development to meet our requirements.

"During the World War we built ships to meet an emergency—any bottom capable of carrying men or supplies that could be built and put to sea in the shortest possible time, not ships designed to subsequently compete economically for the world's markets. Those ships ably served their purpose, but are now practically obsolete. They are too slow to compete with vessels built since the war by other nations. "As an initial step to regain our supremacy on the high seas it is therefore proposed to build and operate a line of ten steamships between New London, Connecticut, or Montauk Point, Long Island, Southhampton and Havre, with daily sailing from each port."

This scheme which was reported fully in *The Nautical Gazette* of September 17 has drawn many comments scathing and otherwise from the foreign press.

Syren and Shipping, London is surprised to find that the Americans are "taking the matter seriously," and adds: "There is no need to reiterate the well known facts regarding the trend of the desire of the traveling public, costs of construction and maintenance, the practical advantages and disadvantages of aircraft and the problems of those who dream of thirty-five-knot liners . . . . they were all given wide publicity when the Italians toyed with a similar idea some time ago. We will only add that the sponsors of the scheme may rest assured that they will have the field to themselves and that in their endeavors to pluck the 'laurels of the Atlantic' from Europe's brow by this method they will at least be free from foreign competition."

Fairplay's comment is: "A capital of £20,000,000 or more would be required for this service, and it is doubtful, unless a very heavy subsidy was arranged, if the expenses could be covered."

Shipbuilding and Shipping Record, discussing the feasibility from a construction point of views says: "The plans provisionally made are for quadruple-screw turbine-driven vessels of 20,000 tons gross with accommodation for 400 or more first-class passengers and with space for 500 tons of cargo. The dimensions proposed are 800 feet in length, 80 feet in beam and 25 feet in draught, and the speed proposed is from 30 to 35 knots. It is remarkable that these phenomenal proposals never seem to take a concrete form. Optimistic designers with little or no experience in the designing of Atlantic liners make suggestions which, on more mature reflection, simply cannot be worked out in practice. The *Lusitania* and *Mauretania* were built as high-speed vessels,

and yet in the evolution of their designs the dimensions crept up from 700 feet by 70 feet beam, to 760 feet by 87 feet 6 inches, the depth being 60 feet and the departure draught 36 feet. If it be assumed that the vessels were limited in fullness to a block coefficient of 0.59, then on the dimensions given the displacement would be 27,000 tons. In order that a speed of 30 knots be maintained the horsepower would require to be at least 80,000. Assuming, further, an oil consumption of 0.7 pounds per s.h.p. per hour the oil consumed on a 3,000-mile run would be 2,500 tons. Stores, passengers, baggage, fresh water and cargo would absorb another 2,500 tons, leaving for weight of hull and the machinery 22,000 tons. Even with all the lastest improvements the weight of machinery would be at least 8,000 tons, leaving for the hull 14,000 tons. When it is remembered that the hull weight of the express Cunarders was 20,000 tons the new proposals seem, somehow, to be out of balance."

New York shipping men while in general rather dubious about the scheme as a commercial venture are by no means so ready to condemn.

"On the face of it" said one authority interviewed by *The Nautical Gazette*, "it sounds hare-brained, but you cannot hold to that point of view when considering the personnel promoting the line. Mr. Ernest H. Riggs and Mr. Theodore E. Ferris, the naval architects, are responsible conservative members of their profession in which they stand very high. If they say the ships can be built to the requirements of the service there is no doubt whatever about it. Operation and construction costs are another matter but the rest of the promoters comprise men experienced and successful as shipbuilders, operators and engineers. There may be some gamble about the degree of support the traveling public will give but no doubt that as a business risk has been worked."

Another shipping authority interviewed expressed what may be considered as the general concensus of opinion. He said: "It is hard to condemn this proposition off-hand without full knowledge of the proposal. The question of the weight of machinery and hull in relation to passenger accommodation and speed is one of the main obstacles but no doubt means can be taken to reduce the weight of hull, probably the machinery and particularly the passenger accommodation. The vessels apparently would not carry any cargo whatever and while this applies to many other fast Atlantic liners, they still carry a little and this little can be added to the other economies on the proposed new liners. But it is safe to say that the desired result is hardly likely to be accomplished without very material sacrifices in what has come to be considered essential for ocean travel judging by the trend toward luxury and more luxury on modern ocean liners."

Still another opinion which ignores both construction and operation is that either New London or Montauk Point are both suitable terminals and that in fact Montauk Point was seriously considered by many shipping companies only a few years ago.

It is understood that the promoters who contemplate a capital outlay of $150,000,000 look to government support from the Construction Loan Fund and also by way of mail subventions.

CURRENT ARTICLES AND BOOKS

"Adjustment of Anti-aircraft Fire"—Captain G. B. Welsh, *The Coast Artillery Journal*, October, 1927.

"Ten Years of Bolshevism: A Symposium"—*Current History*, November, 1927.

"Horsepower of the Mind"—Lieutenant Commander Lybrand Smith, *Power*, October 25, 1927.

"New Theory of the Centrifugal Pump"—A. F. S. Lerzer, *Proceedings of American Society of Civil Engineers*, October, 1927.

"Merchant Ships and the Navy"—E. C. Plummer, *North American Review*, November, 1927.

"The Jutland Battle"—Admiral Von Sheer, *Fortnightly Review*, October, 1927.

"The Coming Age in Aviation"—Commander R. E. Byrd, *World's Work*, October, 1927.

"The German Air Raids on Great Britain"—Captain J. Morris.

"Disarmament and Distractions"—V. S. Stephanson, *Nation and Athanaeum*, September 10, 1927.

"What Next in the Philippines"—Norbert Lyons, *North American Review*, October, 1927.

"The Jutland Battle: Facts vs. Fiction"—T. G. Frothingham, *Current History*, October, 1927.

OCTOBER 2 TO NOVEMBER 1

PREPARED BY PROFESSOR ALLAN WESTCOTT, U. S. NAVAL ACADEMY

FRANCO-AMERICAN TARIFF DISPUTE

TEMPORARY ACCORD REACHED.—The exchange of notes between the United States and France as a result of the recently increased French tariff ended at the close of October in a temporary agreement. This provides for the future negotiation of a permanent commercial treaty between the two nations, and until these negotiations are completed France agrees to allow American goods to enter at the lower rate in force prior to September 6. American concessions include the promise to consider the lifting of certain agricultural, sanitary, and pharmaceutical restrictions which have operated to the disadvantage of French imports to the United States, and the ending of all further efforts to ascertain French production costs through treasury agents in France. The U. S. Tariff Commission will also consider the demand of French perfume, silk, and textile industries for lower duties based on statistics of production costs. Although France grants the lower rates, she does not surrender in principle the right to negotiate reciprocity treaties without giving the same terms to other nations.

The agreement reached at Paris ended a series of notes, the gist of which was a contention on the part of the United States for unqualified "most favored nation" treatment and replies from France to the effect that she could not be expected to grant this without concessions in return. Prior to the agreement, the U. S. Treasury Department, acting under the "flexible" provisions of the Tariff of 1922, raised the duties on French automobile parts, paper blocks, bricks, etc., as a matter of routine in view of the French increases.

MEXICO

REBELLION PUT DOWN.—By the middle of October the revolt in Mexico, which broke out early in the month, appeared to be under the control of the federal troops. News from Mexico, however, was strictly censored. From indirect sources there were reports of friction between President Calles and General Obregon, and that President Calles was not inclined to put full faith in officers of the federal army, entrusting the campaign against the rebels principally to the Minister of War and to José Alvarez, Chief of the Presidential Staff.

The revolt was engineered by General Francisco Serrano, rival candidate of Obregon in the presidential campaign. It began with the mutiny of three army units in Mexico City. Within twenty-four hours Serrano and thirteen of his followers were captured and shot. General Alfonso de la Huerta, brother of ex-President Huerta, was executed on October 7. Generals Gomez and Almada, who led the revolt in Vera Cruz, were defeated on October 10 in a six-hour battle and 600 of their followers were captured, but Gomez escaped. In all eighty-two executions were reported.

In a statement on October 11, announcing the revolt suppressed, President Calles declared that the plot had been known to the government since the middle of August. According to Felix Palavicini, a deported Mexican newspaper editor, the rebellion was planned chiefly by Serrano and intended to prevent the election of Obregon. Obregon, according to Palavicini, will undoubtedly be the next president, though the people of Mexico are against re-election even after an intervening period.

New American Ambassador.—Dwight W. Morrow, newly appointed U. S. Ambassador to Mexico, met President Calles for the first time officially on October 29. The audience hall of the National Palace was crowded to capacity on the occasion with Mexicans and members of the American colony. In view of Mr. Morrow's experience as a member of the firm of J. P. Morgan and Company it was generally felt that he was well fitted to deal with the problems at issue between Mexico and the United States, which are chiefly commercial and economic.

CHINA

Advance on Peking Repulsed.—The tangled web of Chinese Civil War was given a new twist, when, early in October, Yen Hsi-shan, the long neutral governor of Shansi province, undertook an advance against the Northern government in Peking. For many years, during the troubled times in China, Yen had kept his province in comparative peace, but he was believed to have Nationalist sympathies and it was known that Russian and Nationalist propaganda had recently made great progress in the province. The Shansi advance caused the temporary evacuation of the important railway post of Kalgan, west of Peking, and the capital appeared seriously threatened. Kalgan was retaken, however, by the Peking armies, and at the close of the month the indications were that Yen would make peace with Peking and join forces against Feng Yu-hsiang. Reports from Peking stated that Feng had betrayed Yen, failed to coöperate with his advance, and later was moving his own forces from Honan into the southern part of Shansi.

Dissension Among Nationalists.—The lack of unity among the Nationalists and the difficulties besetting the moderate Nationalist Government at Nanking became increasingly evident with the proclamation on October 21, of a punitive expedition from Nanking against Tang Shen-tsi, the present leader at Hankow. The proclamation denounced Tang for alleged negotiations with Peking. In the meantime the Nanking authorities, in desperate need of funds, were negotiating a $24,000,000 loan, with the official support of the Chinese Chamber of Commerce at Shanghai.

British Forces Reduced.—It was reported at the close of October that the British force of 20,000 sent to Shanghai had been gradually reduced to about 6,000, and that probably fewer than this number would remain throughout the winter.

FRANCE

Franco-Serb Security Treaty.—At the close of October the French Foreign Office gave notice that on November 15 France would sign a treaty of friendship and mutual defense with Jugoslavia. This treaty will complete the system of defense treaties inaugurated seven years ago by the Nationalist party and built up to include agreements between France and Belgium in the West and Jugoslavia, Rumania, Czechoslovakia, and Poland in the East. The treaties are regarded not as alliances but as guarantees of support in case of aggressive war by an outside power. The treaty between France and Rumania excludes a war with Russia over Bessarabia as a case for assistance from France.

SPAIN

National Assembly in Session.—The new "consultative" National Assembly in Spain organized by Premier de Rivera opened at Madrid on October 10 and has since been in session. The members of this assembly are not elected but appointed by the government, and its duties are purely advisory. Measures proposed by the government may be debated by the assembly and returned with suggestions, but these the ministers are free to accept or reject. Owing to the refusal of the Socialists as a body to take part in the Assembly, and the resignation of most of the Liberal appointees, the present assembly is overwhelmingly conservative, even more so than the Premier himself.

In a despatch to the New York *Times* of October 13, by Wythe Williams, it is stated that discontent in Spain is growing and an upheaval is feared. According to this report, King Alfonso himself was largely responsible for the ending of parliamentary government in 1923, and the establishment of a dictatorship, because he feared the open discussion of the parliamentary Committee report on Morocco which traced responsibility for military disasters in Morocco to the highest sources. The King

also opposed the creation of this present assembly, but it was put through upon the Premier's insistence.

ENGLISH-SPANISH UNDERSTANDING.—According to an interview with Premier Primo de Rivera published in the London *Times* of October 9, the recent conferences between Sir Austen Chamberlain and the Spanish Premier established the basis for an Anglo-Spanish entente. The proposals made were: (1) that there should be an Anglo-Spanish entente cemented by a new treaty; (2) that Spain should cede her Morocco territory to France on the basis of some "satisfactory arrangement"; (3) that under England's guidance Spain should regain her former important place in the European political scheme. When the question of the surrender of Gibraltar was raised in the interview, Premier de Rivera remarked that Britain would never give it up, and frankly Spain did not want it. Upon the publication of the interview, speculation centered chiefly upon the Spanish Premier's motives in thus hastening to make public the preliminary discussions in a matter of such significance.

ITALY

MUSSOLINI AND THE CHURCH.—A possible step toward settlement of the old quarrel between the state and the Pope in Italy was seen in the publication, in the Vatican organ *Osservatore Romano* of October 13, of the first clear statement of the terms of reconciliation from the point of view of the Vatican. This statement declared that the Pope's freedom from political interference demanded that he be temporal ruler of an independent state "however small." If Italy would cede such a state, the article continued, no guarantees would be asked from foreign powers or international bodies.

The article gained significance from Premier Mussolini's well-known eagerness to strengthen his own control by restoring friendly relations with the Vatican.

SOVIET REPUBLIC

SESSIONS OF SOVIET PARLIAMENT.—In the middle of October the All-Union Soviet Congress held a six-day session in the Uritsky (former Taurid) Palace, Leninograd. About 1,000 delegates were present, of whom it was estimated that 309 or more were peasants without strong affiliation with the Communists. The parliament was opened by President Kalenin, who paid tribute to Lenine, and by Premier Rykoff (President of the Council of People's Commissars) who reviewed the last ten years' progress of the Communist state. Trotsky and Zinovieff, the Opposition leaders, made a dramatic appearance at the session on October 15. Premier Rykoff in his speech called attention to recent concessions to the peasants, including the release of 10 per cent more from taxes, increase of village school budget by fifteen million rubles, of provision for workers' homes by fifteen million, and ten million for restocking farms.

In the course of October, Trotsky as leader of the Opposition group in the Communist party was expelled from the Presidium of the Central Committee of the party, and also from the Central Committee itself, because of "factional activity and indiscipline," including establishment of underground printing plants and correspondence with renegade communists abroad. It was further resolved that these offenses should be laid before the fifteenth party congress in December. While thus ousting the opposition from party councils, the majority leaders adhered to their promise to give the opposition some opportunity to air their views before the December Congress, by granting them a small share of space in the special issue of *Pravda* on October 30.

RECALL OF RAKOVSKY.—On October 7, France formally requested the Soviet Government to recall its Ambassador, Christian Rakovsky, from Paris. This followed the Soviet's disregard of two informal requests of the same character. Rakovsky's most flagrant offense was the signing of a manifesto to soldiers of the world to support the Soviet cause, but he had also attempted to influence French politics by misrepresenting Soviet policy regarding debt payments.

BALKAN STATES

BULGAR-SERB DISPUTE SETTLED.—Reports from Sofia, on October 11, indicated that the recent difficulties between Bulgaria and Jugoslavia were moving toward an amicable settlement, and that Bulgaria's reply to Jugoslavia's protest of the week preceding would prove satisfactory.

Excitement was first aroused in Jugoslavia by the assassination of Brigadier Gen-

eral Kavachevitch, one of the ablest Serb military leaders, at his home in Istep, Jugoslavia, on September 6. The assassination was attributed to Macedonian Comitadje (irregular) bands operating across the Bulgarian frontier. Later activities of these bands were reported on both the Greek and Jugoslav borders, and Jugoslavia requested that Bulgaria take immediate steps to disband the organizations. The Bulgarian Jugoslav frontier was closed and martial law proclaimed in the border provinces. The favorable reply of Bulgaria was urged upon her by representatives of the major powers.

The activities of the Macedonian Comitadje date back to the post-war settlement when former Bulgarian territory in the Macedonian district was given to Greece and Jugoslavia. Pro-Bulgarian opponents of this settlement have since caused constant disturbance.

Tension at Bucharest.—The problem of Prince Carol's claims to the Rumanian throne came to the front at the close of October, when the Prince separated from his mistress in Paris, challenged Premier Bratiano's grip on Rumanian politics, and declared his willingness to answer at any time his country's call to the throne. At the same time an alleged death-bed letter of King Ferdinand was brought forth, which pleaded with Bratiano for Carol's succession. Premier Bratiano proclaimed martial law; arrested ex-Secretary of State Manoilescu with letters from Carol, and summoned parliament with the avowed purpose of forcing the Peasant Opposition Party to a direct acceptance or rejection of the present disposition of the throne. At the close of the month Bratiano appeared master of the situation, and announced that the opposition party had agreed to "proceed by legal methods," which if true would mean acceptance of the present rule for at least fifteen years, since the establishment of King Michael under the regency is sanctioned by the Rumanian Constitution until he comes of age. The head of the Peasant's party, however, spoke strongly in parliament against Bratiano's dictatorial methods and proposed a plebiscite on the question of the crown. There were reports also of conflict between Bratiano and the Regents over the appointment of a follower of the Premier, instead of Prince Nicholas, as head of the army.

Kemal's Oral History.—At the close of October, President Kemal Pasha delivered a speech 400,000 words in length and covering a period of six days recounting Turkish history since the war, which amounted also to a story of Kemal's leadership. The purpose was to familiarize the Turkish people with the achievements of the present régime.

Greek President Attacked.—On October 30, Admiral Kondouriotes, president of the Greek Republic, was shot in the temple while leaving the city hall of Athens. The wound was not serious and the president returned home after hospital treatment. The assailant was a discontented worker of communist sympathies.

NEW LIGHT ON PRE-WAR POLITICS

England Sought German Alliance

(New York *Times*)

October 10.—That Britain entered the fateful Entente Cordiale with France only after repeated efforts to achieve an Anglo-German agreement had been almost rudely defeated by Germany; that she sought Japanese coöperation in the Anglo-Japanese treaty for much the same reason and that she had no conception when she concluded the Entente with France where it would lead her, is strikingly indicated in the first and second volumes of *British Documents on the Origin of the War, 1889 to 1914,* published tomorrow.

Volume XI, which dealt with the period immediately preceding the outbreak of the war, was published some months ago. The present volumes go back to the earliest origins of the great conflict and deal with the end of the British policy of isolation and the Entente Cordiale and the Anglo-Japanese treaty which followed. One sees the machinery of the British Foreign Office working in the actual minutes being published.

King Edward's Active Rôle

For the first time in English history the King's Minutes also are published. The King is King Edward, who it is evident played an even more active rôle than was suspected in the diplomatic maneuvers which bound Britain and France together in an alliance which was to withstand the shock of war. He, incidentally, was the first

Englishman to suggest an entente with Russia.

The first volume tells a story never before told in detail and practically unknown. It shows how when Germany seized Kiaochau, Lord Salisbury, the British Foreign Minister, proposed that Russia and Britain pool their differences with Germany and maintain the status quo in China. Russia dallied with the proposal, but three months later seized Port Arthur, which upset the whole diplomatic apple cart. In fact as a stiff dispatch from Lord Salisbury to Russia indicated, it brought England and Russia near the brink of war.

Russia and England in March, 1898, sought and almost negotiated an alliance with Germany. Joseph Chamberlain was the moving spirit in this, but curiously enough, his intervention defeated its own purpose since he was Colonial Secretary, and the Germans were suspicious of the negotiations conducted by the Colonial instead of the Foreign Secretary. The truth was that the Foreign Secretary, Lord Salisbury, was unalterably opposed to the whole scheme.

England did, however, come to an agreement with Germany for the partition of Portugal if that country broke up, as then seemed probable, in view of the state of her finances. This news coming to the ears of Portugal, she vigorously protested and through the medium of her Ambassador, the Marquis de Soveral, who was a great favorite of King Edward's, she induced England instead secretly to reaffirm her ancient guarantees of Portugal's integrity.

When Germany heard of this her Government was indignant, taking the view that England was guilty of double dealing. Contrary to English apprehensions, however, Germany committed no overt act of hostility during the Boer War, and the British Ambassador to Berlin relates that the Kaiser, in the course of a visit of several hours, "did not mention the war or Naval bill, but discoursed until some time past midnight on the education of children and the works of Mark Twain and Bret Harte."

The second volume deals with the Franco-British Entente. Britain had realized during the South African War that the Salisburian policy of splendid isolation was a dangerous one. She made another attempt to secure an agreement with Germany, the occasion being the outbreak of the Boxer rebellion and the proposal being to maintain the status quo in China with the interesting proviso that the agreement should not bind either party to join hostilities against the United States.

However, Prince von Bülow, in a speech in the Reichstag in 1891, made it evident that the agreement would not apply to Manchuria, and as it was in Manchuria that Russia was encroaching, this robbed the agreement of most of its value to England. The Germans took a high tone throughout and also insisted that Italy and Austria should be included in any agreement reached —in fact, it should be an agreement between the British Empire and the Triple Alliance.

Germany Haughty to Britain

Count Metternich spoke plainly and somewhat haughtily to Lord Lansdowne, then British Foreign Secretary, concerning Britain's unwillingness so far to commit herself, as is indicated by the published minute by King Edward:

"The King does not consider the language and arguments made use of by the German Ambassador to Lord Lansdowne as at all satisfactory."

This rudeness had considerable effect, as England already was negotiating with Japan, and it was, in fact, one of the main causes of the Anglo-Japanese alliance. It is made evident that Britain considered the alliance would have a steadying effect on Japan, but in reality it enabled her to lock horns with Russia.

In 1893 an Anglo-German agreement was again in the wind but this time Joseph Chamberlain was against it and the British newspapers condemned it. This final failure left England face to face with France with whom she concluded an agreement in 1894.

From the published documents it appears that England thought she was merely liquidating her existing difficulties with France, not concluding an alliance which was later to bring her into war with Germany.

Of special American interest is the British account of the Manila incident between Admiral Dewey and German Vice-Admiral von Diderichs. The commanding officer of the British ship *Immortalité* refers to it as "a slight case of friction" which arose because the German Vice-Admiral interpreted as an assertion of the American right of

search of Dewey's action in having the German cruiser hove to and boarded to determine her identity.

Dewey, however, made it clear he claimed no right of search and the British officer advised the German Vice-Admiral that he considered visits by blockading vessels to establish identity as admissible.

Names of New Members Not Previously Published

Agnew, J. R.
Aldrin, A. G., Lieut. U.S.N.R.
Alderman, J. C.
Armstrong, L. R.
Adams, W. M.
Bush, A. R.
Bullock, Chandler
Blakeslee, R. W.
Bradbury, H. G., Lieut. U.S.C.G.
Beard, F. W., Lieut. U.S.N.
Brozo, L. F., Ens. U.S.N.R.
Cook, A. G., Lieut. U.S.N.
Carney, A. G.
Connelly, W. M.
Collier, Barron, Jr.
Coward, Herbert
Cameron, D. A., Ens. U.S.N.R.
Dulles, A. W.
Dodge, W. P.
Delvig, Harry, Lieut. U.S.N.R.
Dwight, C. B.
Dargan, Milton
Durrham, E. J.
Engesser, C. A.
Egan, Martin
Eklund, W. E.
Echevarria, J. E.
Fitzgerald, W. J., Lieut. Comdr., U.S.N.R.
Fales, H. G., Lieut. U.S.N.R.
Foss, H. O., Lieut. U.S.N.R.
Frost, T. H.
Fleming, H. G.
Foskett, J. H., Lieut. U.S.N.
Griscom, W. S.
Gimber, H. M. S.
Greenough, Alfred, Lieut. U.S.N.R.
Golding, L. T.
Holt, W. C., Lieut. U.S.N.
Hague, R. L.
Hutchinson, M. W. Jr., Lieut. Comdr. U.S.N.
Johnson, W. C.
Jackson, W. B., Lieut. U.S.N.
Jeanes, I. W.
Jackson, S. A.
Johnson, E. C., Lieut. U.S.M.C.R.
Kiernan, J. C., Lieut. U.S.N.R.
Kenney, S. E., Lieut. U.S.N.
Laedlein, R. A.
Lovejoy, R. L., Lieut. U.S.N.
Leggett, W. D., Jr., Lieut. U.S.N.
Long, J. W., Lieut. U.S.N.
Lee, G. S., Ens. U.S.N.R.
McKenzie, Milton
Mullen, M. D.
McCaffrey, J. J.
McDermott, M. J., Lieut. U.S.N.R.
McDonald, J. E.
Morris, W. V., Lieut. Col. U.S.A.
Merritt, J. C., Ens. U.S.N.R.
Mason, F. S.
NuDelman, J. S., Lieut. U.S.N.R.
Napier, E. T., Ens. U.S.N.
Pfeiffer, P. S., Lieut. U.S.N.R.
Pagenstecher, Rudolph
Passmore, Lyman, Captain, U.S.M.C.
Rembert, Arthur, Lieut. (SC) U.S.N.
Rollins, P. A.
Rice, G. E. Dr.
Rhynhart, W. W.
Scarlett, W. G.
Smith, Jewett H.
Smith, Elward
Stroebel, G. A., Ens. U.S.N.R.
Schultheis, H. R.
Shepard, S. G.
Sanders, Harry Lieut. U.S.N.
Sborigi, G. V.
Shinkle, Vincent, Midn., U.S.N.
Stout, K. L., Midn., U.S.N.
Shank, J. L., Ens., U.S.N.
Tarbuck, R. D., Lieut. U.S.N.
Taft, C. W.
Vincent, S. A.
Wanamaker, Rodman
Wilson, J. D.
Winters, W. H.
Wolf, Richard, Jr., Lieut. U.S.N.R.
Whitin, J. E.
Watt, James
Willson, T. A.
Williams, Henry, Jr., Midm. U.S.N.
Weymouth, A. L.
White, W. O.

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FROM BISMARCK TO THE WORLD WAR—A History of German Foreign Policy 1870-1914. By Erich Brandenburg, Professor of Modern History in the University of Leipzig. Translated by Annie Elizabeth Adams, Oxford University Press, New York, 1927. $7.00.

REVIEWED BY REAR ADMIRAL W. L. RODGERS, U. S. NAVY (RETIRED)

During the war, our prejudices and emotions were strongly developed by the propaganda for that purpose directed by the various belligerents. We should now be willing to modify the beliefs we then held, if we wish to have a true perspective of events. Abundant material is now available for writing history, as distinguished from propaganda. In all countries, prominent statesmen and soldiers have offered their apologies and, although all wish to speak well of themselves, even if sometimes at the expense of their colleagues, yet by comparing accounts, errors can be eliminated and we draw near the truth. But we have even more valuable sources available although yet incomplete. The two great countries swept by revolution—Germany and Russia, where the present governments are without sympathy or relations with their predecessors—these have thrown open their archives. Unfortunately, the victor nations have been slow to imitate this example, for their governments today are composed of many of the same men who were in power before the war, and doubtless on many points complete frankness would embarrass some now in the national administration, as well as their friends in opposition who may succeed them at any time. In spite of this reluctance of the rulers of the victor nations, the revelations of the German and Russian archives necessarily throw much light on the policies and conduct of the other powers in the days preceding the war.

Mr. Brandenburg has availed himself of all these varied sources in an effort to explain how Germany was led to declare war against Russia on August 1, 1914. He has mastered the archives and the memoirs concerned; he knows what he wishes to say and he says it clearly, although the plan of his work involves some repetition of incidents which appear as principal in one chapter and as secondary in another. But the story which he develops with much plausibility, and with evident good faith, is that Germany never wanted war from Bismarck's time until 1914, but that, nevertheless, she brought it on by her diplomatic blunders; and even in the last week before the war, when she was alarmed at its approach, she blundered in allowing other nations to force her hand when she earnestly desired peace and might have maintained it by wiser action. As he tells the story, it is a tragedy of blunders and not of malevolence, and is well worthy of reading as a corrective to some of our own prejudices, even if we do not accept his views in their entirety.

The book is learned, instructive and deeply interesting, giving a point of view far from the accepted one of the Allies and associates.

The writer begins with a brief sketch of the position of the great powers in 1871, at the close of the wars of liberation of the nineteenth century, which created the King-

dom of Italy and the German Empire. Of the six great powers of Europe, three, in the main, were satisfied, wishing for prosperity through peace, namely, Germany, England and Italy. Two were dissatisfied, France and Russia. France wanted to recover Alsace-Lorraine, and Russia wished to expand in the Far East to obtain the freedom of the Bosphorus and to aid the kindred Slavic peoples subject to Turkey. Russia's internal difficulties rendered her not unwilling to contemplate foreign war as a preventive of domestic revolution. France and England already had secured control of most of the great areas open to colonial expansion, and Italy and Germany soon began to be jealous for openings in this field, but not to such an extent as to contemplate an European war for the purpose.

The sixth great power, the Dual Monarchy of Austria-Hungary, was different from all the others in that the two halves were united only by allegiance to the person of the Emperor and King. Moreover, both the Austrians and the Hungarians ruled and oppressed subject Slavic races who had sympathetic kindred in the adjoining countries of Turkey and Russia. In the face of the growth of nineteenth century democracy, Austria-Hungary was decadent. Her rulers felt obliged to be busy to stave off the dissolution of the Dual Monarchy and its further resolution into its component nationalities, which in any case could probably not be deferred beyond the death of the Emperor-King. Slavic Russia looked anxiously for the break-up of Austria.

Discordant Austria-Hungary, fearing for the stability of its Union, and feeling that a disturbance in the Balkans arising on her own initiative might perhaps be less objectionable than one originating otherwise, provided a continuous irritant. Here were the elements of the tragedy of the war. In this general situation, the policy of Bismarck was to make the maintenance of Germany's leading position in Europe his cardinal point. Although he wished for peace and the quiet economic development of his country, yet, towards the last, he regarded with favor the acquisition of German colonies, but never did he contemplate a war for such gains, nor fail to consider them as wholly secondary to the maintenance of European peace, and of Germany's position in Europe. All his alliances were made with a view to putting Germany in such a controlling position that she could forbid a general European war. For he thought that the Empire which he had established by war could not really profit by further war, even if successful.

Then, in 1890, the new young Emperor, jealous of Bismarck's authority, dismissed him and discarded his policy with him. At this moment Germany was united with Austria-Hungary and Italy in the Triple Alliance for defensive purposes, and also was separately allied with Russia in a so-called "Reinsurance" treaty, the general effect of the two treaties being to restrain both Russia and Austria-Hungary from aggressive action in southeastern Europe. At the same time, the treaties isolated France, and thus secured a predominance to Germany which it was Bismarck's purpose to utilize in maintaining general European peace. In the winter before his retirement, Bismarck was negotiating with Russia for a renewal of the Reinsurance Treaty and it was on the point of going through when he left office. His departure caused some hesitation to Russia and, finally, the German Foreign Office under its new management made the decisive refusal. Thus, within two months after Bismarck was dropped, no one remaining in office so much as understood his policy for the maintenance of peace and Russia was driven to seek elsewhere for support. Yet the new authorities in Berlin had no aggressive intentions, they simply drifted without far-seeing views, doing each day what the day seemed to require. This was the background of the events leading to the war.

The failure of the Reinsurance Treaty withdrew the buffer between Russia and Austria and to gain support against the British rivalry in Asia, Russia drew nearer to France. Accordingly the military convention between Russia and France was signed in 1892 and at first was undoubtedly merely defensive in purpose to protect Russia against German interference in case of Austro-Russian friction.

England was thus left isolated and in rivalry with Russia in the Far East and with France in Africa. She felt her isolation in the Boer War when Germany was expressing sympathy with the Boers. She therefore tried to draw near Germany, but Germany, although not unwilling, held aloof in order to make her own terms, believing that England could never agree with France

and Russia over their disputes as to spheres of influence and the like.

But the unexpected came in 1902 when England and Japan made a treaty for mutual insurance. Next came the Anglo-French Entente in 1904, which settled the differences about Egypt and Morocco. Just at this time the Russo-Japanese friction over the Far East came to war in which Russia was rather encouraged by the Kaiser, who hoped thus to see Russia so occupied in the Far East that she would be unable to dispute with Austria about Turkey and the Balkans. But the defeat of Russia brought this hope to nothing, for Russia (distracted by internal disputes over the Duma) renounced her aggressive purposes in the Far East, and decided to rely for prestige on her conduct of affairs in the Near East in the way of developing the national aspirations of her racial kindred in the Balkans. However, the necessity for reorganizing and strengthening her army after the war rendered her fairly impotent against Austria and Germany for seven or eight years after the close of the war.

Germany had been powerful as the head of the Triple Alliance, so long as England and the Dual Alliance stood apart from each other, but as England drew towards France and then France drew her two friends together, Germany lost her position as arbiter. At the same time, Italy approached France. She always hated Austria and besides she wanted Tripoli, and so interfered with Austria's wish to maintain Turkish integrity for the sake of Balkan peace. Thus the Triple Alliance itself became somewhat loosened.

In this situation, Germany saw no better policy than one of hectoring the other powers at every occasion in the hope of picking up some concession. It was thus she behaved in 1905 and 1906 in Tangier and the Algeciras Conference. She got little, but caused suspicion and strengthened the Anglo-French Entente.

Again in 1911 with the Agadir incident she was perhaps legally correct, but politically she was most unwise. Moreover, she declined the English proposition for a limitation of navies because she thought it best to make England fear her power. Thus she raised further suspicions as to her belligerent intentions when really she did not want war, but expected her opponents to yield because they thought she would fight. During all this period between the Russo-Japanese War and the Great War the Nationalistic Movement among the Slavs of the Balkans was increasing. Russia encouraged it, although not yet ready for war.

In 1908 the totally unexpected Young Turk revolution broke out and Austria was encouraged to annex Bosnia contrary to the Treaty of Berlin of 1878, under which she had administered the province and was its practical ruler. War was avoided with great difficulty. Russia was deeply offended by this act and only her military weakness prevented war. In the end the treaty was modified to cover Austria's breach. Germany was indignant at her ally's act but stood by her as "her humiliation is our humiliation." Some of her leading people began to doubt the wisdom of their vigorous and powerful country being tied to a decadent ally whose capricious acts could not be controlled.

About this time, thinks Brandenburg, Germany should have made the great decision to abandon Austria-Hungary and its convulsive efforts to prolong the frail existence of the discordant Dual Monarchy and turned to Russia and England to settle the whole Balkan question at the expense of Austria and Turkey, Germany taking the German provinces of Austria into the German Empire. Thus France, always looking for a good opportunity for a war for Alsace-Lorraine, would have been helpless, and England would have been spared from the present French hegemony on the continent which, as he says, is now more galling to her than any Germany victory could have been.

But German statesmen were not bold enough to break off and turn to a new policy which might have saved Europe.

In August of 1911 Italy took advantage of the situation resulting from Agadir to accomplish her long felt desire to occupy Tripoli. The most serious consequence of this occupation was that the Balkan states were emboldened to attack Turkey in the following year (November) as soon as they could form a union among themselves, and Turkey was overcome. Russia rather encouraged this war although not quite ready to fight herself.

In case of a general war at this time, Russia was sure of French aid against Germany, but Great Britain was an uncertain element. The key to the situation lay in London, where, if Grey had given any support to his allies, war would have broken out then.

Peace with Turkey was signed in May, 1913, but at once the victors fell out over the spoils, and Bulgaria, Austria's protégé, was defeated by Serbia, Russia's protégé. The result of the two wars was most prejudicial for Austrian policy. Germany was alarmed about Austria's uncertainty of aim and her insistence upon German support, but afraid to break with her only friend. In Russia, the leading statesmen believed in Germany's peaceful intentions but doubted her ability to restrain her erratic ally.

On June 28, 1914, the murder of the Archduke at Sarajevo afforded Austria the long desired pretext for a settlement with obnoxious Serbia, but she overplayed her hand. At first Austria had general sympathy, but she went too far and Russia was now ready for war and determined not to permit undue punishment for Serbia. Austria was obstinate and Germany regarded it as necessary once more to back Austria because Austria would never forgive desertion. Thus she did, knowing that an Austro-Russian war would become a general one.

But Germany believed Russia was unready and relied on the restraining influence of England as in previous crises.

As events moved on, Germany became seriously alarmed and put strong pressure on Austria, and Austria agreed to negotiate with Russia, but it was too late. The latter was mobilizing, and Germany mobilized too and then declared war (August 1), being simple-minded enough to believe that the world would perceive that she was not the aggressor, but was merely taking military advantage of her quicker mobilization after Russia had decided for war.

France had been in the attitude of observer until war was declared, but when Sazonoff immediately asked Paris to support Russia, Poincaré replied that it was better to wait and let Germany commit the first overt act against France and thus gain the support of the French people and the sympathy of the world. Germany declared war on August 3 as Poincaré wished. More than any other two personalities, the author holds the Frenchman Poincaré and the Russian Iswolsky guilty of having precipitated the war.

For France and Russia to win the war it was necessary to get England on their side, but Germany needed English neutrality. Germany made offers to guarantee French and Belgian independence after the war. But England refused to engage herself to neutrality on these terms.

To have England join, Russia did her best to make it appear in London that the Austrians were the aggressors. It was not likely that the British public would find a *casus belli* in the Austro-Russian dispute, but the Belgian invasion provided the needed impulse.

It had long been known that the German war plan required a march through Belgium. But the German Foreign Office had made no preparation for the diplomatic justification of this violation of neutrality.

The treaty of neutrality was by no means clear as to the passage of foreign troops. Gladstone had maintained in Parliament that the treaty terms were insufficient as guarantee, and the older French and British plans for entering Belgium in war had been allowed to lapse for the sake of throwing the onus on Germany. Instead of making use of these arguments the German Chancellor in the Reichstag acknowledged a breach of treaty and pleaded necessity.

On the English side it was clear that the Government was in favor of war, but Parliament was doubtful. The speech of Grey was directed to the violation of Belgium, where it was vital to England not to permit Germany to lodge, nor permit her to include that country, Holland and Denmark, in a German sphere of influence. But the guarantees that Germany had offered to Britain as to France and Belgium were unmentioned.

At midnight, August 4-5, England declared war.

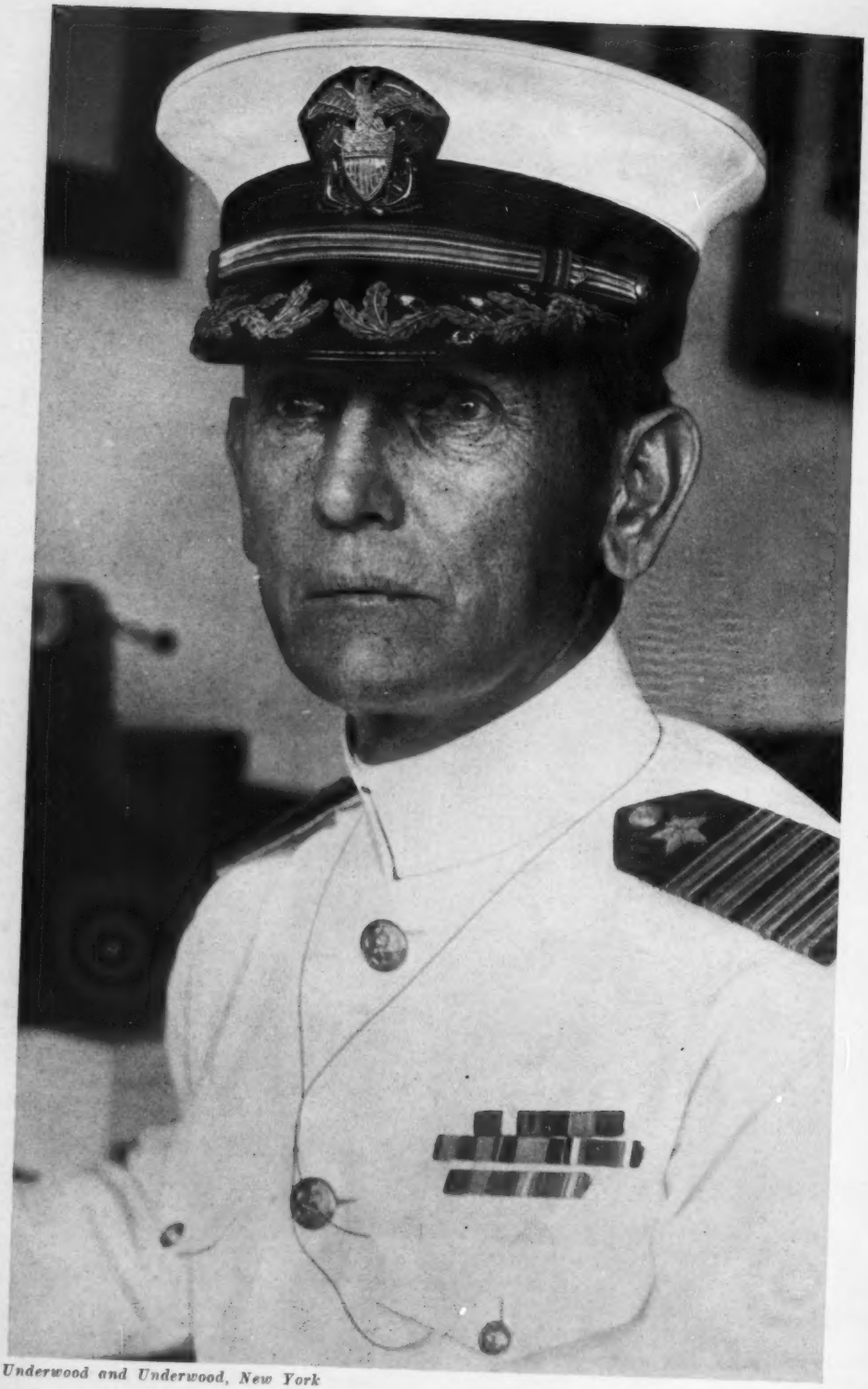
Germany's fatal error was in believing that in this case, as had happened before, Russia would be restrained by a stern display of Austro-German solidarity. For many years German diplomacy had recognized that the General War, if it ever came, would arise from Austro-Russian friction, but neither diplomatic nor economic preparations had been made. Except from a strictly military point of view Germany was unready.

The writer thinks only one explanation is possible, namely, the German leaders did not believe in the probability of a general war.

"Those who meet a great catastrophe thus unprepared," the author says, "scarcely can have feared it in real earnest, certainly cannot have willed it, manifestly cannot have striven for it."

BRONZE TABLET UNVEILED IN THE LIBRARY OF THE U. S. NAVAL ACADEMY, OCTOBER 4, 1927.

Presented by the Brazilian Navy in memory of the late Rear Admiral Carl T. Vogelgesang, U. S. Navy, former Chief of the American Naval Mission to Brazil.



Underwood and Underwood, New York

THE LATE REAR ADMIRAL CARL T. VOGELGESANG, U. S. NAVY

Former Chief of the American Naval Mission to Brazil. A bronze memorial tablet, the gift of the Brazilian Navy, was unveiled October 4, in the library of the Naval Academy, Annapolis, by the Naval Attaché to the Brazilian Embassy, Washington, Captain F. Villar. See page 1353.

SECRETARY'S NOTES

Season's Greetings

The president and officers of your organization extend to all the members of the Naval Institute and the readers of the PROCEEDINGS Holiday Greetings with best wishes for the New Year.

Extra Copies of February Number to Cost $1.00

The February issue of the PROCEEDINGS should be extremely interesting and valuable and for that reason many of our members and readers may desire to have extra copies sent to their friends; for this reason this advance notice is being given as the edition will be limited. Members will, of course, receive their regular issue, but should extra copies be ordered for their friends, the price of the February number will be $1.00 per copy and you are advised to send in your order and money at an early date.

The number will have a natural color autochrome frontispiece in full colors of Henry Reuterdahl's oil painting of the *American Battle Fleet in the Straits of Magellan,* now loaned to the Naval War College by its owner Admiral Sims. In addition to illustrations incident to the passage of the Battle Fleet through the Straits of Magellan, visiting the roadstead of Valparaiso and arriving at Callao, Peru, the issue will also feature George Washington, our first president and first Commander-in-chief, the twenty-second of that month being the 196th anniversary of his birthday. The magazine will contain approximately thirty-seven reproductions of the famous revolutionary war paintings by the artist John Ward Dunsmore, of which George Washington is the central theme (the November number contains three illustrations of reproductions of Dunsmore's work of which Yorktown was the theme.) In addition to these illustrations there will be some thirty odd beautiful illustrations of scenes and colonial buildings that Washington visited in Annapolis from the time of his first visit at the age of twenty-five about 1757 until he finally resigned his commission as commander-in-chief, at nearly fifty-two years of age, in the OLD SENATE CHAMBER in the present State Capitol at Annapolis.

There will be over eighty beautiful full page illustrations and the Editor has no hesitation in saying that these will equal in appearance those of any magazine published today.

Arrangements are now being made which it is hoped will result in the PROCEEDINGS being able to include hereafter a beautiful colored photograph as a frontispiece in each issue.

The Cruise of the Battle Fleet

December 16 marks the twentieth anniversary of the departure of the Battle Fleet from Hampton Roads on its cruise around the world. As it is the intention of the Editor to carry in this and future editions of the PROCEEDINGS a group of illustrations of this fleet and of some of the places at which it touched it might be well to give a short résumé of the circumstances attendant upon its departure and of the benefits and gain in prestige incident to the successful completion of the cruise.

In the late spring of 1907 the Battle Fleet, under command of Rear Admiral Robley Dunglison Evans, U. S. Navy, lay at anchor in Hampton Roads. The spring target practice had been completed and the Fleet assigned the duty of assisting in making the Jamestown Exposition a success. At this time a New York newspaper published a statement that the President had decided to transfer the battleships from the Atlantic to the Pacific. Other papers denied that such a move was contemplated and it was not until July that the Secretary of the Navy, Mr. Metcalf, announced in a speech that the transfer was really to be effected. The President's motives in sending the Battle Fleet to San Francisco are best shown by an extract from his message to Congress delivered December 3, 1907. See page 1255.

From that time until December, Admiral Evans devoted his energies to the organization of the fleet and to the preparation for its departure upon such an extended cruise.

On December 12 all the ships of the fleet were gathered in Hampton Roads. They are listed below together with the names of their commanding officers.[1]

First Division

Connecticut.....Captain H. Osterhaus
Kansas.....Captain C. E. Vreeland
Vermont.....Captain W. P. Potter
Louisiana.....Captain R. Wainwright

Second Division

Georgia.....Captain H. McCrea
New Jersey.....Captain W. H. H. Southerland
Rhode Island.....Captain J. B. Murdock
Virginia.....Captain S. Schroeder

Third Division

Minnesota.....Captain J. Hubbard
Ohio.....Captain C. W. Bartlett
Missouri.....Captain G. A. Merriam
Maine.....Captain G. B. Harber

Fourth Division

Alabama.....Captain T. E. DeW. Veeder
Illinois.....Captain J. M. Bowyer
Kearsarge.....Captain H. Hutchins
Kentucky.....Captain W. C. Cowles

Torpedo Flotilla

Flotilla Commander.....Lieutenant H. I. Cone
Whipple.....Lieutenant J. G. Church
Truxtun.....Lieutenant C. S. Kerrick
Lawrence.....Ensign E. Friedrick
Stewart.....Lieutenant J. F. Hellweg
Hopkins.....Lieutenant A. G. Howe
Hull.....Lieutenant F. McCommon
Arethusa (Storeship).....Commander A. W. Grant

[1] *Pictorial Log of the Battle Fleet Cruise Around the World.*

AUXILIARIES

Culgoa.....Lieutenant Commander J. B. Patton
Glacier.....Commander W. S. Hogg
Panther.....Commander V. S. Nelson
Yankton.....Lieutenant W. R. Gherardi

Admiral Evans commanded the fleet and the First Division; Rear Admiral W. H. Emory, the Second Division; Rear Admiral C. M. Thomas, the Third Division; and Rear Admiral C. S. Sperry, the Fourth Division.

All ships had been coaled, an enormous amount of stores taken on board and every preparation made for departure. The famous old Chamberlain and the other hotels around Fortress Monroe were crowded with the families of officers, come to say goodbye.

"The President had decided that he would come to Fortress Monroe in the *Mayflower* to review the fleet, say goodbye to the officers and men, and see us off on our long cruise —an honor which every officer and man felt deeply and duly appreciated. The morning of the sixteenth came with leaden skies and a promise of bad weather. The fresh cold northwest wind made boating ugly work, but somehow we believed in Roosevelt weather, and sure enough it came. As the *Mayflower* approached the fleet, the rails of the ships were manned, the officers paraded in special full dress, the marine guards presented arms, the bands played the national air, and a salute of twenty-one guns was fired. As the reports of the saluting guns died away, the clouds parted, the sun came out, and ushered in a most beautiful day. It was, indeed, Roosevelt weather. The *Mayflower* anchored in the midst of the fleet, and all the flags and commanding officers repaired on board at once to be greeted by the President and the distinguished people who accompanied him and to say goodbye to them.

"As I passed over the gangway I was met by the President and greeted by him in his usual hearty and courteous manner. A battery of cameras clicked and snapped as Mr. Roosevelt gave me a few last instructions. . . . . For the first time I was authorized to say to the officers and men of the fleet, that, after a stay of a few months in the Pacific, the fleet would return to an Atlantic port via the Suez Canal.

. . . . . .

"On this occasion it was plain from his manner that Mr. Roosevelt felt deeply the importance of the step he had decided to take and which had centered upon the Navy of the United States the critical attention of the whole world.

. . . . . .

"As soon as the President had said goodbye to all the officers, the *Mayflower* got underway and stood slowly out of the harbor. I made signal for the fleet to weigh by squadrons in succession, and in eight minutes after the signal came down, the Atlantic Fleet was underway and forming column, not again to anchor in home waters until it reached the coast of California. It was certainly a grand and impressive sight and one to make any American heart swell with pride, these splendid great ships in the pink of condition, much overloaded though they were, picking up their anchors and turning under difficult conditions of wind and tide, with mathematical precision. The wives and sweethearts on the beach waved their handkerchiefs and cheered, the bands played, 'The Girl I Left Behind Me,' and the great white ships, in perfect order, went on their way.

"The *Mayflower,* with the President's flag flying, led the fleet out of Hampton Roads, and so perfect was the formation that looking back from the flagship, but one ship could be seen, the positions of the others being indicated by the dense columns of black smoke from their stacks. When in proper position in the lower bay the *Mayflower* anchored, and the fleet, with rails manned and officers in special full dress, passed in review, each ship firing twenty-one guns as she passed. . . . . Our last farewell had been said and the long line of overloaded white ships stood out to sea on their course to Trinidad, our first port of call."[2]

It was not until evening that the fleet was informed of the President's decision to send the fleet around the world. The following signal from Admiral Evans was received during the dinner hour and published in every wardroom:

Unofficial Signal

U.S.S. Connecticut
December 16, 1907

"The President authorizes the Commander-in-Chief to inform the officers and men that after a short stay on the Pacific Coast it is the President's intention to have the fleet return to the Atlantic Coast by way of the Mediterranean."[3]

Thus began the cruise of the Battle Fleet; a cruise which took this fleet 42,227 miles, and which extended over a period of fourteen months and six days; a cruise which reflected great credit upon the Navy of that day and which even today stands as one of its great achievements.

"It is too early to sum up the results of the voyage of the battleship fleet since it is hardly as yet half over, but thus far it has given us an opportunity to get better acquainted with the republics to the south of us; with our own island possessions; with the new and vigorous branch of the British Empire in Australia and particularly with Japan, and it has afforded the people living in those countries a better opportunity to get acquainted with us. It has been everywhere in the South American countries and most notably in Australia and Japan, understood and accepted, as it was intended, as the reaching out of a strong hand in friendly greeting on the part of America; and the cordial and enthusiastic hospitality extended to our fleet will no doubt be long remembered and has, unquestionably, exerted a powerful reflex action on feeling in this country. Between the United States and every country visited there is a feeling of deeper interest and friendship than existed before the fleet sailed. Our own Pacific Coast and island possessions have been placed in sight and touch with the strength of the nation. No doubt can remain, therefore, that the cruise of the battleship fleet has marked a long stride in the direction of international peace and has tended materially to cement the traditional friendships of the United States with the countries at whose ports this international call has been paid."[4]

[2] *An Admiral's Log,* Evans.
[3] *With the Battle Fleet,* Matthews.
[4] *Report of the Secretary of the Navy,* 1908.

The Legion of Valor

Last month there was held in Baltimore the annual convention and annual banquet of the Army and Navy Legion of Valor of the United States of America. To one who had the privilege and honor to meet the members of this organization it was a solemn and inspiring moment, its members including those who had received the Congressional Medal of Honor or the Distinguished Service Cross, for service performed in action with the enemy in time of war, above and beyond the call of duty.

Unveiling of the Tablet to Rear Admiral Vogelgesang—a Gift by the Brazilian Navy

On October 4 there was unveiled a beautiful bronze tablet in the Naval Academy Library to the memory of Rear Admiral Vogelgesang—a gift from the Brazilian Navy. At the unveiling ceremonies Captain F. Villar, Naval Attaché to the Brazilian Embassy, Washington, delivered the following address:

"The Brazilian Navy will always remember gratefully the noble services rendered to her by the late Rear Admiral C. T. Vogelgesang, the great chief from whom she received so many beautiful lessons in our most brilliant institution—the Naval War College—inexhaustible source of her efficiency, and the clever organization of the American Naval Mission, which, there with us, coöperates in such a magnificent way in the betterment of our defensive capacity and professional culture.

"This bronze tablet is a token of our perennial gratitude and homage to his many merits and virtues, in public as well as in private life, reminding all of his ideals and his noble heart of sailor and friend, left as an inheritance, and the great benefit that was afforded to us by his great political farsightedness, his vast knowledge, his upright character and extreme devotion.

"Undoubtedly, great were the services rendered by the late American Admiral to my country, but, certainly, the greatest of all these services—the one that we consider above all—was his constant effort to link, in an indissoluble way, this old friendship that has tightened together for more than a century, The United States of Brazil and the United States of America.

"If it were necessary for me to prove all I have said, there would be no difficulty in having my statements supported by the officers of the American Navy, who either have been with the Mission or are still in Rio, the splendid services of whom I beg to proclaim in this moment with all enthusiasm, as an eloquent testimonial of the wonderful work there accomplished by the late Admiral Vogelgesang. I avail myself of this opportunity to extend to those officers the most profuse thanks of the Brazilian Navy for all that the Naval Mission has done and is still doing for the growth of our naval power, and for the consolidation of our affection and sincere admiration for your dear country. You may feel sure that in discharging myself to this duty, I do it, not only for the sake of carrying out instructions I have received, but, with all my heart, full of pleasant memories of the chief and friend so prematurely stolen from his country, from his Navy and from his family.

"With the deepest patriotic gratefulness for all he did for our Navy and the way he was dedicated to the interest of the defense of my country; in behalf of the Brazilian Navy, that will never forget the eminent Admiral Vogelgesang—professor in our War College and illustrious organizer of the brilliant and useful American Naval Mission to Brazil, I esteem it an honor to have the privilege of presenting you with this bronze tablet."

Rear Admiral Nulton, superintendent of the Naval Academy, accepted the tablet in behalf of the Navy in an appropriate speech.

Change in Wording on the Pilot Chart

Above the top margin and to the right the Pilot Charts of the Hydrographic Office of the Navy Department for many years have carried the legend:

"Founded upon the researches made and the data collected by Lieutenant M. F. Maury, U. S. Navy."

Pilot charts recently issued carry the new wording, the credit line reading as follows:

"Founded upon the researches made in the early part of the nineteenth century by Matthew Fontaine Maury while serving as a lieutenant in the United States Navy."

Each day seems to bring an increase of interest in the man who has done so much for surface navigation and the times seem opportune for the reception of the Naval Institute's new book now being published and entitled, *Matthew Fontaine Maury: Pathfinder of the Seas.*

Maury's Advice to a Midshipman

The following letter, dated May 30, 1850, to Mr. A. H. Leiber, about to enter the Naval Academy, found among the papers of Matthew Fontaine Maury, is published for the information of our readers:

" . . . . Your future position in life and your standing in the Navy depend upon the degree of energy with which you shall acquit yourself of the duties required of you as a Midshipman. If you be idle and inattentive now, you cannot hereafter recover the ground that you will lose. Letting the opportunities now afforded you pass unimproved, you cannot expect hereafter to contend, except at great odds, with your comrades for the honors of the profession.

"Make it a rule to make everything while you are young bend to your profession. The books that you read for amusement, let them be professional books instead of novels—which I hope you will *never* read—read the lives of eminent naval men. I commend to your particular attention Mackenzie's *Life of Decatur* and the *Life of Admiral Collingwood.* Take these two characters as your examples, and always have them in your eye, make them in all things, except the duel and the course toward Barron, your models.

"I say never read novels, but eschew them while you are young as I hope you will strong drink—because they are as destructive to the wholesome habits of the mind as mint-juleps are to those of the body—they both enervate and unfit one for hard study or hard labor—and as a beverage both are very pleasant. But hate them both, I pray you, my young friend, for they are poisons.

"Make it a rule to ask yourself at night what you have learned during the day, and do not be content until you get a reply, and always learn something if it be only the meaning of a word from the dictionary.

"Make it a rule to obey all orders promptly and cheerfully. It is immaterial how disagreeable the officer giving the order may be, or how unpleasant the duty; go about it

cheerfully, never sullenly nor carelessly. Sometimes you will find the Midshipmen disposed to turn on one of their fellows and 'run him' as it is called. Make it a rule never to join with them in this, for it not unfrequently ends, particularly in the Navy, in downright persecution.

"Make it a rule never to offend, nor to seek causes of offense in the conduct of others. Be polite to all, familiar with but few. Do not be quick to take offense, you will never find a gentleman who will wilfully and without any cause real or imaginary offend another. Therefore whenever you imagine yourself aggrieved either by an equal or a superior officer—when you are in doubt as to whether the offense were intended or not, go straight up to him, state the case, and ask the meaning of the intention. Never let imaginary offenses, slights or cuts, find a place in your breast—they sour the disposition. Ask to have them explained at once, and in asking be always polite—never show temper.

"The rule in the Navy is to treat everybody as a gentleman until he proves himself to be otherwise. It is a good rule—observe it well. You will sometimes hear the opinion expressed that it is necessary for a young officer to establish his courage by fighting. Now believe me, my young friend, that the courage to stand up and be shot at is the poorest sort of courage. He only is truly brave who has the courage to do right. This is the highest quality of bravery that a military (man) or any other man can possess.

"The doing right, the acting up to the principle, may sometimes seem to you to be inexpedient, or it may have the appearance of making you unpopular—but this principle of conduct will build up a character founded on the rock which nothing can shake; and let me assure you that it is unwise and always wrong for a man to have enmity in his breast between himself and his conscience. When principle is involved, be deaf to expediency. It is a dangerous word to all classes of men. I would, if I could, teach you almost to hate it. . . . .

"Your sincere friend and well wisher,
M. F. MAURY"

Our Library of Photographs

The Secretary is pleased to announce that we have made great initial progress in the establishment of a library of photographs which is daily increasing in value and numbers. We have obtained quite recently some wonderful etchings depicting colonial scenes and features of Annapolis, which we hope will prove of interest to all of our readers.

We shall always want photographs and no one is better able to supply them than officers of the Navy and Marine Corps who have many opportunities while cruising in different parts of the world; many civilian associates are similarly situated. Such officers, enlisted men, and civilian members, who are interested in photography, should send us their photographs and they will be well paid if their prints are accepted. All we ask is that the prints be clear cut and suitable for photo engraving (half tones) providing, of course, the subjects are suitable, and the best guide the Secretary can offer with regard to the latter, is for those who are interested to glance through the PROCEEDINGS since January 1, of this year—surely a varied range for subjects.

The School for Seamen

The question of putting destroyers in and out of commission is one belonging to our policy makers. The Navy Department is in a position to realize the demands for personnel and, therefore, its decisions as to policy are apt to be correct.

Aside from this, it is wondered if the great value of destroyers for training seamen is fully realized.

Going to sea in battleships is like driving long a highway in a ten-ton truck. The truck has right of way by reason of its size. Of course, theoretically, it has to observe the rules of the road, but actually it travels in a care-free manner.

So in a battleship; once clear of the harbor, the battleship takes the sea in a care-free manner. It realizes that smaller vessels in the organization will keep clear; that the ship is more or less immune to the discomforts of the sea. With a personnel of nearly a hundred officers and twelve to fifteen hundred men, the battleship conducts itself as a traveling drill field.

Now take the destroyer; its troubles begin as soon as it clears port. Its duties carry it here and there, at generally high speeds. It has to keep clear of the major units of the organization and at the same time serve them. The slightest sea starts the destroyer tossing and rolling about. While the battleship steams majestically along, the destroyers smash their ways through a smother of foam.

The destroyer is the school for seamen. It is here that men learn to endure the discomforts of the sea and to realize the enormity of it. Care and vigilance are of paramount importance. Only a slight error of judgment may cause the loss of the ship.

Young officers entering or about to enter command rank are given a ship and its responsibilities. It is up to them to carry this ship through its varied duties efficiently and safely. They are in competition with a hundred other ships of the same class.

He is given a half dozen officers and a hundred men. He must size up their capabilities and make the best use of them. These officers and men are in turn given opportunities to display their ability to handle situations; and situations bob up constantly.

Responsibility brings with it confidence. Graduates from the school of the destroyer are useful men. They take hold because they are in the habit.

Anyone who has watched the destroyers in maneuvers realizes the fact that everyone must be on his toes—situations develop with amazing rapidity. Decisions must be prompt and correct, coöperation is vital.

In spite of the discomforts of the destroyer it is difficult to pry men out of them. The zip and dash appeals to the imagination—hard work is compensated for by excitement. Watch them in night attack, charging through utter darkness with a complete realization of what will happen if a mistake is made! Hear the chuckles of satisfaction (and relief) when a successful attack has been pulled off.

It is a great service, full of hard work, discomfort and danger. But to offset this, it has the spirit of youth and adventure.

The Department policy at present keeps over one hundred destroyers in commission. Each year these train numbers of officers and men in the habit of seamanship, breed the spirit of self-confidence due to responsibility and experience; train them to make prompt decisions and to coöperate with their fellows.

Maybe there should be more destroyers in commision; that is a problem for the policy makers, conversant with the needs of the service. But the fact remains, the more destroyers that are cruising, the more seamen we will have among our officers and men.

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The following review appeared in the *Boston Evening Transcript*, September 24, 1927.

Five Years in Turkey

The Great War and Its Progress in the Near-East

Five Years in Turkey. By Liman von Sanders. General of Cavalry. Annapolis: The United States Naval Institute. Price $3.50.

THIS VOLUME will go a long way towards dissipating the popular belief, held by English-speaking people, that the World War was fought and won only in France. Published seven years ago for the edification of German readers, the work is now for the first time translated into English through the kind services of the United States Naval Institute. Much of what is revealed herein will prove to be quite surprising to most readers, as the well-informed person might well have foreseen. The personal records and notes of one who was in control of the various branches of the Turkish armed forces for five years through an arrangement between the Turkish Government and the German foreign office, cannot fail to disclose facts of a more or less startling nature.

From day to day the author's reactions are set down and the various situations which confronted him openly discussed. For this reason the book is more valuable to students of war than the usual books written after the war, in the light of the knowledge which the commander lacked. The reader is constantly reminded of the deficiency of information possessed by the generals in the field, of the difficulty of adjusting plans of battle to the resources available, and particularly of the errors of officers in the high places in Constantinople. The miserable condition of military organization and efficiency in Turkey was a source of continual worry to the author-general. His sentiment on this subject cannot possibly be misunderstood: "Had there been a competition in how to ruin an army by continuous wrong measures, the Turkish headquarters would have been sure of first prize. . . . . In Turkey one can make the most beautiful plans and prepare the execution by drawings and perfect orders, and something entirely different will be done, or perhaps nothing at all. The central office, of course, promised everything asked for, if only for the reason that the Turk considers a direct refusal impolite; but the keeping of the promise was a different matter." This gives us some little inkling of the obstacles in the way of General Von Sanders's successful accomplishment of his mission.

Concerning the results of his five-year sojourn in the East, the author is entirely frank. What was actually accomplished by the German military mission in Turkey is of small import at this late time, but a short decade ago it was essential that Germany take full advantage of the military resources of her Allies. That this particular mission did not meet with complete success is not due to any one cause. Turkey and her leaders must be held to account for not making their aims conform to the available means. Germany is to be blamed for the lack of calm and clear judgment as to just what was within the powers of Turkey. To our author, it seems likely that "thoughts of the tales of The Thousand and One Nights, or the *fata morgana* of the Arabian desert dimmed judgment at home."

S. H.

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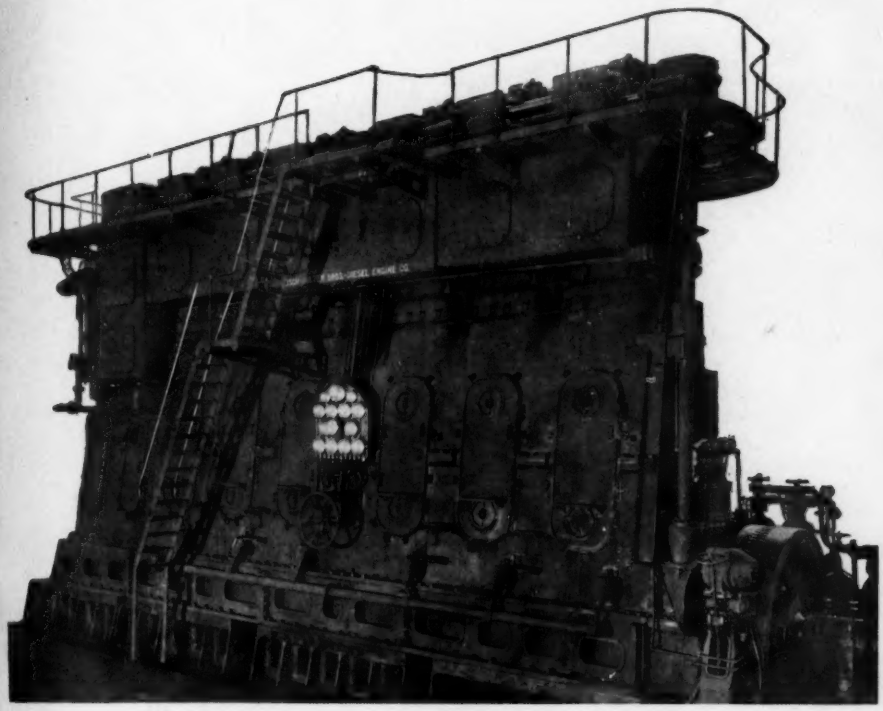

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